# THE IRON AGE

THURSDAY, OCTOBER 4, 1888.

## New Duplex Pump.

We illustrate on this page a duplex steam pump of new pattern, more especially intended as a means of boiler supply. It is built by Mr. John H. McGowan, of Cincinnati, Ohio, and, as the engravings will show, embraces a number of interesting features.

The steam end has valves and steam-ports and packing similar to other patterns of duplex pumps. The mechanism moving the steam-valves is simple and effective. The valve-rods are supported and guided in a straight line by the standard on which the valve levers A and A′ work. It will be noticed that the levers work on a common center, and that the links that move the valve-stems come in contact with the collars on the valve-stems. Any undesirable lost motion that may arise from wear can be taken up by adjustment of the collars on the valve-stems. These adjustments may be repeated until the lost motion caused by the wear of any or all parts of the valve gear equals the space or lost motion necessary in a new pump between the valve-moving links and the collars on the valve-rods to insure full strokes of the main pistons. We need perhaps scarcely explain that the left-hand valve-lever works the steam-valve of the right-hand pump, and *vice versa*. Thus the lever A (see Fig. 2) has cast on its horizontal branch B the lug *b*, which works in an opening in the link D′ (Fig. 1), connecting the lever A with one of the valve-rods, while the lever A′ has keyed on its horizontal branch E a lug *c*, which works the link D. An examination of the engravings will make the action readily understood.

The pump end is substantial. The valve arrangement is entirely new in principle and construction. There are no gratings to clog up, nor are there any valve-stems to be broken off. By the construction of the valve-seats and the manner in which they are arranged to fit the valve-boxes it is impossible for the seats or valves to become misplaced. By the removal of the cap supporting the air chamber all the valves and seats can be removed or replaced at will. Another valuable feature in these pumps is that the valve-box can be taken off and turned to change the position of the suction and force pipe openings. Both steam and water pistons have metallic and self-adjusting packing, by which the friction is reduced to a minimum.




*Fig. 2.—Cross Section of Valve Levers.*

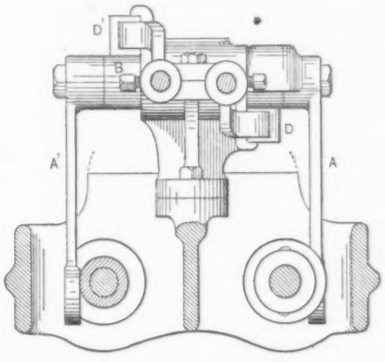


*Fig. 3.—End View of Levers.*

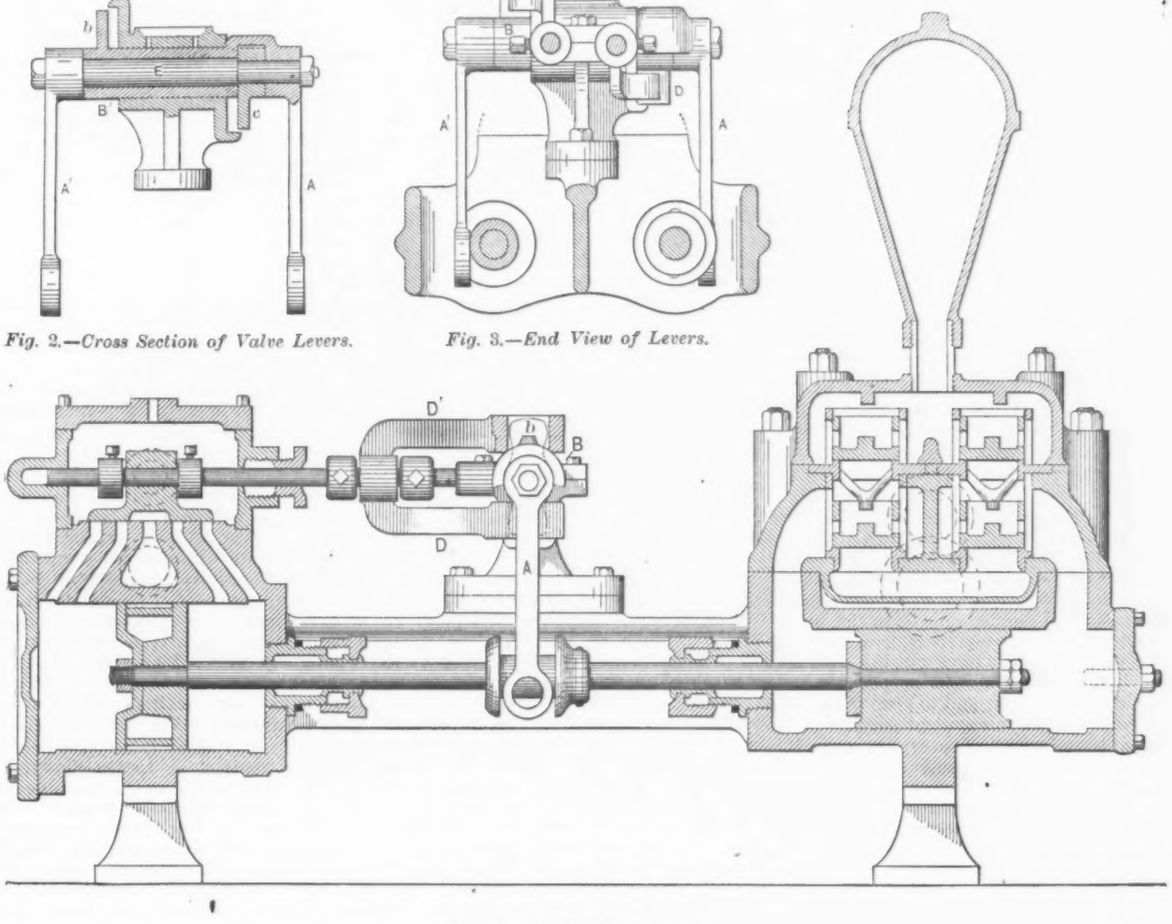


*Fig. 1.—Longitudinal Section.*

DUPLEX BOILER FEED PUMP, BUILT BY THE JOHN H. McGOWAN CO., CINCINNATI, OHIO.

**An Electric Mountain Railway.**—An electric mountain railway, the first of its kind, has recently been opened to the public at the Burgenstock, near Lucerne. Under the superintendence of M. Abt, the rails describe one grand curve formed upon an angle of 112°, and, by an arrangement of the Abt system, the journey is made as steadily and smoothly as upon any of the straight funicular lines previously constructed. The Burgenstock, being almost perpendicular, it would have been impossible to construct a railway upon the old plan. From the shore of the Lake of Lucerne to the Burgenstock is 1330 feet, and it is 2860 feet above the level of the sea. The total length of the line is 938 meters and it commences with a gradient of 32 per cent., which is increased to 58 per cent. after the first 400 meters, and this is maintained for the rest of the journey. A single pair of rails is used throughout, with the exception of a few yards at half distance to permit the two cars to pass. Through the opposition of the Swiss Government each car is at the present time only allowed to run the half distance, and they insist upon the passengers changing, in order, as they say, to avoid collision or accident. The motive power, electricity, is generated by two dynamos, each of 25 horse-power, which are worked by a water-wheel of nominally 125 horse-power, erected upon the river Aar at its mouth at Buochs, 3 miles away. The electric current is conducted by means of insulated copper wires. The loss in transmission is estimated at 25 per cent.

# Minnesota Iron Ores.—I.

BY JOHN BIRKINBINE, PHILADELPHIA, PA.

The iron mines of Minnesota will supply close to 500,000 tons of ore in 1888, the question of how much the total output falls below or exceeds 500,000 gross tons to be decided by the number of vessels which load ore at satisfactory rates at Two Harbors. The Minnesota Iron Company were fortunate in making vessel charters, by which it is understood that the lake freight on most of the ore from their Tower mines costs from $1.10 to $1.30 per ton, but for any excess of ore, and for the output of the Chandler mine, which has only had railroad connection since August 15, more advanced rates, possibly $1.60 to $1.75 per ton, must be paid. These, however, will hardly reach the extravagant figures of 1887, when heavy shipments from the Gogebic mines made late charters bring $2.75 or even $3 per ton for ore from Ashland, Wis., or Two Harbors, Minn. The large all-rail shipments will also have a tendency to keep lake freights lower than they were last year, and it is not improbable that the proposed increase of the lake marine may encourage vessel owners to hold the rates for water transportation within reasonable limits. The proposition to establish at Sandusky a large iron shipyard has brought before the public, through the medium of published correspondence, a more intimate knowledge of the carrying capacity of the vessels now engaged, and the cost and profit of conveying ore from the Lake Superior and Lake Michigan shipping ports to the receiving ports on Lake Erie.

### TWO HARBORS.

Since last year radical changes have been made at Two Harbors, whence all the Minnesota ore is sent forward to the blast furnaces. In 1887 Two Harbors had one shipping dock with 124 pockets, the aggregate capacity of which was 13,500 gross tons. In 1888 the second dock was put into use, and there are now 206 pockets, with a total capacity of 21,000 gross tons. Marked improvements in the harbor and in the shops on shore, a rearrangement of tracks, &c., have put the Duluth and Iron Range Railroad in position to handle ore promptly, and to keep the road and rolling stock in excellent order. The whole complement of over 350 cars is kept fully employed, and frequently a train is loaded with ore at the Tower mines, runs 70 miles to Two Harbors, discharges its load into the pockets, returns empty to the mines, is loaded again, and on its way to the lake within 24 hours. A shortage of vessels, therefore, speedily produces a stagnation, and early in September all the pockets were full, and 1800 tons of ore in cars awaited a chance to be be dumped. The railroad has been carrying about 20,000 tons per week, and the shipments up to the close of August reached an aggregate of 227,500 tons. As lake navigation will not be suspended until the middle of November, the probabilities are that the Minnesota Iron Company's mines will produce 450,000 tons and the Chandler mine 40,000 tons of ore, bringing the total for Minnesota close to 500,000 tons for 1888.

### ALL-RAIL SHIPMENTS.

Some of the output will go by all-rail routes, and if the present rate of $2.50 per ton from Tower to Chicago is maintained the quantity of ore thus handled will be considerable. Up to September 1, 28,500 tons of ore had been sent forward in this way. The ore at present goes via the Duluth and Iron Range Railroad to Duluth, the St. Paul and Duluth Railroad to St. Paul, and by the "Burlington" system to Chicago, a distance of nearly 700 miles. The severe winters of the Northwest offer little discouragement to "all-rail" shipments of the hard lump ores from Tower mines, and experience in shipping the softer Gogebic ores teaches that the greatest annoyance arises from the cars meeting a thaw and subsequently freezing *en route*. With continuous rail shipments and augmented lake transportation it is moderate prophecy to figure on an increase for 1888 of 25 per cent. over the output, of nearly 395,000 gross tons in 1887. Some of the Minnesota ore goes this year to Troy N. Y., Scranton, Pa., Pottstown, Pa., and to some of the Lehigh Valley blast furnaces. This suggests the thought that what the demagogue is pleased to designate as "monopolies" must in this case be satisfied with fairly moderate profits. For the mining company removes the ore from the ground, loads it into cars, one railroad company transports it 70 miles, dumps it into expensive ore docks, and thence into vessels which carry it the entire length of Lakes Superior, Huron and Erie to Buffalo; there it is shoveled into buckets, lifted from the hold, loaded into cars and carried by another railroad 300 miles across the Empire State, to meet practically at tide water foreign ores which pay a duty of 75 cents per ton.

### THE IRON BELT.

The Vermillion range, from which comes all of the iron ore which has so far been shipped from Minnesota, exhibits the ore bearing rocks, extending from Tower (70 miles north of Duluth) in a northeasterly direction for 50 miles to the Canadian border, and the jasper formation in which the ore is found is traced also into the Dominion. All of the water from this range finds its way into Rainy Lake and river, and thence into Hudson's Bay. The Messabi range of granite, which is 15 miles south of the Western end of the Vermillion range at Tower, has a more northerly trend, approaching the Vermillion range near the National boundary. It, however, extends further west than the Vermillion range, and indications of magnetic iron ores are reported for 30 miles west of and 50 miles east of a point 55 miles due north of Duluth. The range also passes into the Dominion. The ore so far explored in the Messabi range occurs in jasper or quartzites in a ridge or hills just south of the granite range. Most of these ores are magnetites, but some hematites in jasper are also found. An interesting discovery has lately been made close to the line of the Duluth and Iron Range Railroad, 48 miles from Two Harbors, which is being thoroughly explored. Indications favor finding a deposit of soft hematite ores similar to some of the Menominee or Gogebic ores. The Messabi range is the water-shed between the drainage of Lake Superior and that of the Mississippi River and Hudson's Bay; the prevailing opinion being that magnetites occur on the Superior slope and red hematites on the other. The exceptions seem too numerous to make the rule hold good, and some excellent cores of magnetite have been taken by diamond drills from the vicinity of the Vermillion range.

Explorations are much less active than last season, and the Chippewa Indians who fancied that they were prospective millionaires, will now sell a birch bark canoe for $2, which they sold several times over in 1887 to various prospectors for from $10 to $15. The energy displayed in prospecting last year was commendable, and if "good turns" are made on some ventures, the profit will be well earned. Access to the range was, until lately, possible only by canoe route, and as a consequence the amount of luggage was reduced to a minimum. There is considerable romance in the prospect of a ride in a real birch bark canoe, but when four or five persons get into one of these apparently frail structures bringing the gunwales into close proximity to the outside water-level by the ½ ton of humanity and luggage it carries, a few hours will reduce the sentimental to the real. Kneeling at bow or stern and wielding a paddle continuously, is as monotonous, and possibly more wearisome than sitting in a cramped position on a "pack," in either case balancing constantly so as to prevent the canoe capsizing by the waves on the lakes, or by sudden turns in the narrow creeks. When relief comes, it is to shoulder a rude knapsack or "pack" with head strap and assist over the portage, wading through swamps, slipping from logs or scrambling over rocks and through underbrush until the canoe is lifted from the head of the Indian, and again placed in the water ready for its load. Many accustomed to the conveniences and luxuries of city life have made long canoe journeys into this wilderness, tramped through rough or swampy ground in summer, or paddled over ice and snow on snow shoes in winter, seeking a paying mine, trying with compass, pick and drill to explore nature's secrets.

Up to the present time the prospects have been numerous and the mines few, but there seems little reason to doubt that development will prove the deposits of iron ore in Minnesota to be both numerous and important; the extension of railroad facilities bringing into prominence mines whose names may become as familiar as those of some of the Marquette mines. At present, however, there appears to exist no cause which would have necessitated the transfer of the interest controlled by Mr. Charlemagne Tower, of Philadelphia, other than that he received his price, and developments must increase in number and importance before another railroad is constructed from the iron range to the lake.

One retarding factor to developments is the uncertainty of fee of some lands, owing to the failure of the homesteader to "prove up," or to the efforts on the part of speculators to question whether the land laws were fully lived up to. Several suits have been entered since the development of iron mines made the Minnesota wilderness valuable. It is the custom now (where any uncertainty exists as to the proper fulfillment of the Land Office requirements) for the homesteader to renounce his claim to the tract, which the purchaser immediately takes up with script issued to soldiers or to the Sioux half-breeds. This makes an indisputable title and protects the parties who are developing the property. There is a radical difference in the method generally followed in opening up the Vermillion range to that pursued in the Gogebic range two years ago. The properties in the former are to a large extent being explored by the owners, no leases of importance having been made except at the Chandler mine. Several syndicate operations to control large tracts of land in the Vermillion range contemplate the purchase of the land and not the lease. On the other hand, the fee of most of the territory embraced in the Gogebic range was in the hands of a few private owners, or else came into the possession by grant to the ship canal or railroad companies. As a result the realty was not sold, but a lease drawn to the advantage of the land owners was the rule in the Gogebic range, and numerous organizations called "mining companies" placed stocks before credulous investors, offering as an asset an iron-clad contract by which the mining company agreed as lessee to pay a royalty (generally 50 cents per ton) on all the ore taken from the property, but in any event, whether ore was mined or not, the lessor was to receive pay for an amount which was fixed as the minimum. The wild speculation which resulting in placing over $100,000,000

*nominally* of "mining stocks" on the market at ridiculously small percentages of the "par value," and the collapse of the bubble which were to be expected, will be beneficial to the Vermillion range by encouraging investments approaching more closely the intrinsic value of property, and by insuring development less rapid but more permanent, because it will be done by the owners of property and not by lessees.

It may be paradoxical to assert the fact, but it is evident that the absence of railroad facilities along the Vermillion range is to its future advantage. The Duluth and Iron Range Railroad passes over the Messabi range, and, after meeting the Vermillion range, follows practically the strike of the ore-bearing rocks to Ely, from which it can and probably will be extended eastward. This gives convenient access to the canoe routes, and permits of getting tools and provisions into the camps of the explorers; it can also deliver the necessary machinery for preliminary development at points from which it can be carried on sledges in winter to most of the properties presenting an encouraging outlook. There is no doubt but what the railroad will be extended as rapidly as circumstances demand, or, if not, that other railroads will be constructed to handle the ore which is taken out in quantity from any mines which may be opened. This will encourage judicious exploitation. On the Gogebic range the railroad followed the ore strike and preceded much of the development, thereby stimulating the operators to bring the mines into the list of shippers as soon as machinery could be set up; opening some of them in a temporary manner and obtaining cheap ore for the present, which must be more than offset by augumented cost in the future.

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During a recent visit to the Philadelphia Shafting Works, G. V. Cresson, Philadelphia, we were impressed with the methodical manner in which all the details of a large business were being carried through in every department. Mr. Cresson has many "wrinkles" which save time and avoid annoyance. A very simple plan has been adopted by him to distinguish between city and country orders. All are numbered as they are received. The former given an even number, the latter an odd number.

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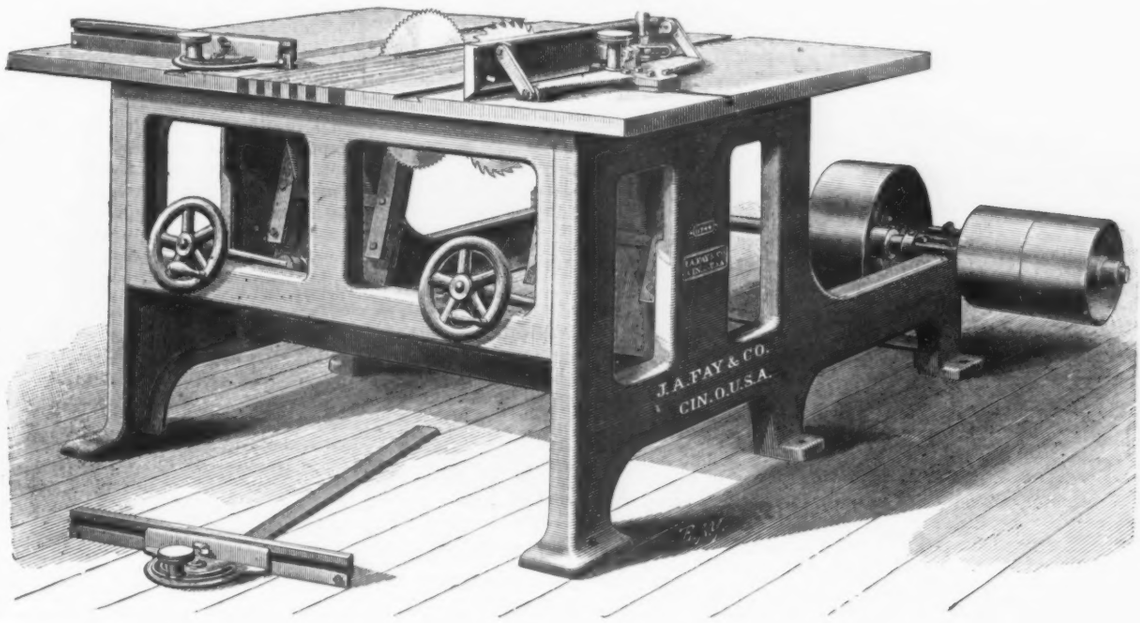
### Double Saw Machine.

J. A. Fay & Co., of Cincinnati, Ohio, are bringing out a double saw machine especially adapted to the wants of cabinet-makers. The general appearance of the machine is shown in the annexed engravings. The frame is exceptionally heavy and strong, the arbors large in diameter with long bearings, each arbor and frame being adjusted independently of the other in plane gibbed ways, so arranged as to always retain the same general tension of the belt at any point to which they may be elevated. The hand wheels for use are convenient to the operator, and the table always remains at the same hight. The top is of iron, carefully planed, and measures 4 feet 2 inches by 4 feet 11 inches. It is fitted upon one side with an adjustable fence, which can be set to different angles, and is moved in planed ways to and from the saw. The other side carries a cutting-off slide, provided with stops to govern the length to be cut, which can also be set at varying angles. T slots for miter or cutting-off slides are placed close to each saw. The space between the two saws is of wood, and may be thrown back, allowing free access to the saws. Grooving, rabbeting, plowing and other heads can be used in place of either saw, which may be both rip or rip and cross-cut, according to the work required to be done.




DOUBLE SAW MACHINE, BUILT BY J. A. FAY & CO., CINCINNATI, OHIO.

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**The Pittsburgh Steel Casting Company.**—Under the management of William Hainsworth, who seventeen years ago began with a single crucible, the Pittsburgh Steel Casting Company, at Pittsburgh, has acquired a national reputation for crucible and Bessemer steel castings. During a recent visit we found the works engaged in a large variety of work in the crucible department, and had occasion to witness a blow in the Bessemer department. The latter is equipped with two converters casting into one pit. Mr. Hainsworth melts the best stock available, the differences in his practice from that usual in Bessemer works being that toward the close of the blow he charges a few shovelfuls of sand. The ferromanganese is added in a liquid state, being melted in crucibles. After the addition of the ferromanganese the metal in the converter is thoroughly rabbled, and then the steel is cast as quickly as possible. At the time of our visit a number of large rolls were being cast for Jones & Laughlins, of Pittsburgh, the Troy Steel and Iron Company, and others. The blooming mill has been idle for a considerable period and the building is soon to be used for rolling cast-steel wheels.

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### Twin-Screw Steamers.

Twin screws driven by triple-expansion engines have in so many cases proved more effective and economical than the side-wheelers and propellers built a few years ago that the question of converting old side-wheel steamers into twin screws is likely to arise. The experience of an English railroad company in this direction is therefore interesting. The London and Northwestern Railway some months since placed their paddle-wheel steamer, "Duchess of Sutherland" (built in 1869), in the hands of Messrs. Laird Brothers for conversion into a twin-screw steamer, with the expectation that her efficiency for their cross-channel cattle trade would be improved, and that considerable gain in economy would result from the introduction of more modern machinery. The work has been completed, and on a recent trial trip the vessel ran 14½ knots, the engines developing 1400 horse-power. The old machinery, side wheels and boxes were removed, but the forward and after sponsons or guards and their houses on each side are retained and connected, the houses forming quarters for the ship's officers, storerooms, &c. The old side-wheel space is decked over and formed into a large additional space for cattle. The necessary alterations have been made about the stern of the vessel, and stern tubes and brackets fitted, and the arrangement of engine keelsons, bulkheads, coal-bunkers, &c., has been modified to suit the new machinery. This consists of two sets of triple expansion engines having cylinders 16½-inch, 26-inch and 41-inch diameter, with a stroke of 30 inches, and

working at 150 pounds pressure, steam being provided by two double-ended cylindrical Scotch steel boilers. The carrying power of the vessel has been increased by about 190 tons, large additional deck space for cattle gained, while the net register tonnage has been reduced by 247 tons. The speed has been considerably increased, and the consumption of fuel reduced 60 per cent

## The Grading of Southern Pig Iron.

In the New York market report of *The Iron Age* of September 27th we announced that Southern pig iron manufacturers had agreed to change the grading, the new and old grades compared being as follows:

| *New Grade.* | *Old Grade.* |
|---|---|
| No. 1 Foundry | No. 2 Foundry. |
| No. 2 Foundry | No. 2½ Foundry. |
| No. 3 Foundry | No. 1 Mill. |
| No. 1 Soft | Open Bright. |
| No. 2 Soft | Close Bright. |
| Silver Gray | Silver Gray. |
| Gray Forge | No. 2 Mill. |
| | Mottled. |
| | White. |

The following companies have agreed to the change:

| | Operating the furnaces. |
|---|---|
| Tennessee Coal, Iron and R. R. Co. | 4 Ensley.<br>2 Alice.<br>3 So. Pittsburg.<br>1 Sewanee. |
| Sloss Iron and Steel Co. | 4 Sloss. |
| Nashville Iron, Steel and Charcoal Co. | 2 Nashville. |
| Williamson Iron Co. | 1 Williamson. |
| Mary Pratt Furnace Co. | 1 Mary Pratt. |
| Roane Iron Co. | 2 Rockwood. |
| Citico Furnace Co. | 1 Citico. |
| Dayton Coal and Iron Co., Limited | 2 Dayton. |
| Gadsden-Alabama Furnace Co | 1 Etowah. |
| Walker Iron and Coal Co. | 1 Rising Fawn. |
| Chattanooga Iron Co | 1 Chattanooga. |
| Sheffield & Birmingham Coal, Iron and Ry. Co. | 3 Cole. |
| Eureka Company | 2 Eureka. |
| Woodward Iron Co. | 2 Woodward. |
| De Bardeleben Coal and Iron Co. | 2 De Bardeleben. |

As bearing on this subject, we quote the following from a paper read by Kenneth Robertson, general manager of the Sloss Iron and Steel Company, Birminghnm, Ala., at a meeting of the American Institute of Mining Engineers. It deals, of course, with the evil as it existed, but—

All strangers visiting this district are struck with the peculiar manner in which the pig iron is graded. There are 11 regular grades, besides which, when Gray Forge is ordered, one-half of Nos. 1 and 2 Mill are shipped. Occasionally there is another grade known as Silvery Mill, which is made so seldom that I cannot describe it, and have no sample to exhibit. Most of you have found it difficult to grade properly and uniformly under the simpler system which obtains elsewhere, and can consequently readily imagine the increased difficulty with us. Each furnace employs an expert, and even with this precaution the system is not conducive, at all times, to amicable relations between buyers and sellers. I am told that it was adopted at the time Southern irons were seeking a market.

The grades are as follows:

No. 1 Foundry (no longer recognized), a large-grained, dark-colored iron with crystallization extending well out to the edges of the pig. In my experience but little of it is made, and I am inclined to regard it more as a freak than a product. An average of three analyses shows 3.66 per cent. silicon in this grade.

No. 2 Foundry (new No. 1) is the equivalent of a No. 1 Foundry at the North. An average of 18 analyses gives 3.02 per cent. silicon.

No. 2½ Foundry (new No. 2) corresponds to No. 2 Foundry elsewhere. An average of eight analyses shows 3.02 per cent. silicon.

No. 1 Mill (new No. 3 Foundry) is also known as No. 3 Foundry, and in it are included irons which are not quite good enough for 2½ Foundry, and also those which are equal to what is known as Gray Forge in the Lehigh Valley and vicinity. The best of this iron is used for foundry purposes. An average of four analyses gives 2.87 per cent. silicon.

No. 2 Mill (new Gray Forge) is between 1 Mill and Mottled, and contains 2.44 per cent. silicon as an average.

No. 1 C. (now Silver Gray) is open-grained Silver Gray. I have but one analysis, which shows 5.25 per cent. silicon.

No. 2 C. (now abandoned) is close-grained Silver Gray. Average of three analyses, 7.09 per cent. silicon.

No. 1 Bright (now No. 1 Soft) is a foundry iron which is light in color but open-grained. It is made by every furnace in every district at times; but it is only in this section that it is separated from the foundry irons. Elsewhere it would be shipped as No. 1 Foundry. Average of three analyses, 3.69 per cent. silicon.

No. 2 Bright (now No. 2 Soft) is one grade lower; is closer grained; and the average of fourteen analyses is 3.11 per cent. silicon. Elsewhere it would be a No. 2 Foundry.

To complete the number, we have Mottled and White, which are the same here as elsewhere.

An idea has been prevalent for a long time that Southern irons are highly siliconized and weak; that the product of the furnaces is not foundry, but chiefly of the lower grades; and that the lower grades are sold with difficulty. The preceding analyses show that the foundry irons do not contain more silicon than irons of the same grade in other districts; the mill irons are higher in silicon than those of Glendon and Andover, but they are sold without difficulty. As to the product of the furnaces, I will give the percentages of each grade which one of the furnaces under my charge made during ten months' working under very disadvantageous circumstances. Other furnaces in the district have undoubtedly done much better; and these figures are not given as typical, but merely to show that we do make foundry iron, and that the greater portion of our product is not of lower grades.

The average of 27 determinations of phosphorus is 0.66 per cent.

*Percentages of Old Grades Made.*

| | |
|---|---|
| No. 1 Foundry | 0.27 |
| No. 2 Foundry | 26.23 |
| No. 2½ Foundry | 19.48 |
| No. 1 Mill | 33.82 |
| No. 2 Mill | 6.85 |
| No. 1. C. | 0.56 |
| No. 2 C. | 1.39 |
| No. 1 Bright | 6.07 |
| No. 2 Bright | 2.76 |
| Mottled | 2.38 |
| White | 0.19 |
| Total | 100.00 |

Calling the bright irons Foundry, which they are, the proportion of foundry iron made was 54.81 per cent., probably half the 1 Mill would have been classed as foundry elsewhere. These results are not considered as the *ne plus ultra* of furnace work, but will show what we are doing, and also that the impression that but little foundry iron is made here was erroneous.

## The Waterbury Manufacturers and Lake Superior Copper Interests.

An impression widely exists in the metal trades that Connecticut and Massachusetts copper and brass manufacturers are largely interested in Lake Superior copper mining enterprises. In a conversation recently with one of the leading manufacturers of the Naugatuck Valley, we were given the leading historical facts which may have created the impression above alluded to. It appears that in the early history of the opening up of copper mines of the Upper Peninsula, one who had been connected with brass and copper manufacturing in Connecticut was struck by the opportunities offered in the way of the establishment of smelting works at Detroit. The matter was broached to Waterbury mills, and after some hesitation a committee of two was appointed by the latter to investigate on the spot the proposals made. The result was the building of a smelting plant below Detroit, the original capital of the concern, the Waterbury and Detroit Copper Company, being $20,000. At practically the same time Mr. J. W. Clark and others interested in Lake Superior mining had started works at Houghton, called the Lake Superior Copper Company. Both prospered, the former concern having for its stockholders four of the Waterbury mills. A few years later the two smelting works were consolidated under the name of the Detroit and Lake Superior Copper Smelting Company, which for a good many years handled practically the entire output of mineral from the Lake Superior mines. From time to time the works were enlarged and the capital increased, the returns being uniformly large. Of the four Naugatuck mills one failed, and its interest was disposed of to a number of parties, the remainder of the holdings being to some extent sub-divided by death and marriage.

Mr. Clark was interested largely in the Osceola Mining Company, and it was through his efforts that his associates, the three remaining brass and copper works in the smelting company, entered into an agreement with him to take the product of the Osceola Mine at a price lower by ¼ cent than the market price in New York between the 15th and 25th of each month. This agreement was advantageous to both parties, since it freed the Osceola Company from participating in the sacrifices made by the Lake Superior copper companies on export sales during the existence of the pool. The income of the mills in question was considerably enhanced by the results of their investment in the smelting company, and it is this which is the only direct connection which there is now or has been between the copper and brass manufacturers of New England and the mining interests of Lake Superior.

## The Cost of Blooms and Billets.

On page 696 of the "Tariff Statements" of the Finance Committee of the Senate we find the following figures of cost of converting pig into Bessemer ingots, and the latter into blooms and billets:

*Cost of Bessemer Ingots*

| | |
|---|---|
| Waste of pig and new material | $2.80 |
| Labor | 1.12 |
| Fuel | .35 |
| Refractories | .15 |
| Molds and stools | .24 |
| Maintenance and running expenses | .75 |
| Total | $5.41 |

*Cost of Bessemer Blooms from Ingots.*

| | |
|---|---|
| Waste of metal | $0.65 |
| Labor | .63 |
| Fuel | .25 |
| Maintenance and running expenses | .55 |
| Total | $2.08 |

*Cost of Blooms from Pig.*

| | |
|---|---|
| Pig to ingot | $5.41 |
| Ingot to bloom | 2.08 |
| Total | $7.49 |

*Cost of Bessemer Billets*

| | |
|---|---|
| Waste of metal | $0.90 |
| Labor | 1.60 |
| Maintenance | .45 |
| General maintenance of works and running expenses | 1.10 |
| Fuel | .29 |
| Total | $4.34 |

*Cost of Billets from Pig.*

| | |
|---|---|
| Pig to ingot | $5.41 |
| Ingot to bloom | 2.08 |
| Bloom to billet | 4.34 |
| Total | $11.83 |

No indication is given of the source from which these figures have come, nor is there any clew to the locality. Still they are of much interest, as showing the items of labor, of fuel and of waste. They are valuable, too, as indicating what is the cost of the forms of soft steel given over the cost of pig iron.

Williamson Bros., of Philadelphia, Pa., have received an order from the International Steamship Company for a hoisting engine for their new steamship City of New York. This is doubtless the only American built engine or piece of machinery on this famous vessel. They are also building four hoisting engines for the company's dock in New York city, two of which are double drum hoisters. They have received an order from the Clyde line for four hoisting engines on the steamship Benison, to replace the English ones now on board.

# Cost and Prices of Iron Beams.

STATEMENT OF F. J. SLADE, OF NEW JERSEY.*

There is probably no branch of iron manufacture that requires such heavy and expensive machinery for the output of so little product as that in question. The average output of each of the mills engaged in this manufacture in the year 1887, in which year the product was larger than in any previous year, was less than 9000 tons. This quantity is much less than the product of a steel-rail mill in a single month. This great difference is due to the fact that steel rails are rolled on orders for thousands of tons, of a single pattern and of uniform length, thus enabling every operation of the works to be systematized to the highest degree, and special machinery to be devised to reduce the cost of each item to a minimum.

In the manufacture of rolled beams, however, the orders are for quantities seldom as much as 50 tons, to be made at a given time, usually for lots of a single carload or less. While the quantity of beams in large fire-proof buildings seems considerable, the fact is that, being erected only in large cities, the total quantity of beams required for them is, after all, small. Moreover, the orders are not given in such a way as to enable the beams to be rolled in quantity, as in the manufacture of rails, but are given out a story at a time, each containing a great variety of sizes and lengths, requiring constant changes of rolls, and, consequently, constantly interrupting the manufacture.

The variety of regular patterns is so great that a period of one or two months usually elapses from the time any one is rolled till it can be again made, and, consequently, it is necessary, in order to ship beams as required, to carry a large stock of all sizes, and to cut from this beams of such sizes as cannot be rolled promptly. The waste in this operation is very large, and, as it applies to a very large proportion of the total business, becomes an important factor in the cost. It is evident, therefore, that no two branches of manufacture could be more unlike than the manufacture of steel rails and that of rolled beams—the one the most uniform, and dealing with immense quantities, the other cut up into little lots of the most diverse character.

As already stated, the machinery required for the production of these large sections is so expensive that the capital invested in proportion to the yearly product is very great. Hence it is impossible that any profit can be realized unless the beams be sold at a price considerably above that charged for such staple articles as rails or merchant bars. It is popularly considered an axiom that competition for orders will necessarily cease when the price obtained ceases to yield a profit, and that, therefore, unrestricted competition will insure the manufacturer as large a profit as he is fairly entitled to. Every manufacturer knows that this is entirely untrue. The cost of every manufactured product is made up of two classes of expenses—namely, those which depend upon the output, such as material, labor and fuel, and those which must be met whether or not any product be made, such as taxes, rent, interest on mortgages, salaries, general expenses, &c. There will, of course, be no competition for work at prices below those which will cover the expenses of the first class, but the price must be sufficient to cover both classes of expense before any profit can be realized, and the keenest competition occurs when the ruling price is such as to somewhat more than cover the first class without fully meeting the second, because there is then a life or death struggle to reduce the inevitable loss which stares the manufacturer in the face. Under such circumstances there is no escape from bankruptcy except in some means which will limit competition.

It has been charged that a "trust" exists among the makers to maintain an exorbitant price for this product. It is true that to prevent ruinous competition there have during the past 16 years, with a single interval, been agreements of various kinds between the makers of beams to maintain the price at a figure that would yield a fair profit. We claim that the public have no right to the products of labor at a less price than will yield a fair profit on that labor. We claim also that when prices fall below the point at which this can be secured, it is the natural right of any man to agree with his competitors to maintain prices at a fair figure. We claim, indeed, that it is the duty of the manufacturer so to protect his investment, for capital invested in plant for a profitless manufacture cannot be withdrawn, such works being entirely unsaleable, and, therefore, the manufacture must be made profitable or the capital is practically destroyed. That nothing more than this has been attempted by the makers of beams is susceptible of easy proof. During the whole period referred to the profits on the capital invested have not amounted to 10 per cent. per annum, while the public have had the full benefit of the cheapening of cost by the reduction in the cost of raw material and the improvement of processes, the prices at which beams are sold to-day being but a trifle over one-half of that prevailing in 1873.

There is no complaint from our customers of the operations of the so-called combination (there is no "trust" whatever); on the contrary, the course pursued has their support and approval. This is due to the fact that we have always made it a principle to make absolutely no discrimination between one party and another, and, therefore, every buyer is sure that he is on the most favorable basis in relation to his competitors. There has never been the slightest effort to coerce any one, either rival manufacturer (of whom there have been and are several) or purchaser, either from engaging in the manufacture, or from buying their beams of parties not under agreement, or importing them from abroad. The beams can be and are now laid down here at less than the ruling American price. Their quality, however, is so inferior that in most cases the American beams are preferred.

We hold, therefore, that there has been nothing in the conduct of the beam-makers to warrant a reduction in the duty on this article, and to do this because they have taken rational means to protect themselves from loss would be an act of warfare which Congress has no warrant for waging upon them. It is no part of its duty to destroy the reasonable profits of manufacturers, nor to take away their natural rights in order that the rest of the public may for a time profit by their ruin. It is for the interest of all that all capital invested in useful industry should be fairly profitable, and therefore where, as in the present case, no injustice can be shown, but, on the contrary, a record that has won the approval of all concerned, it would be a gross wrong for Congress to discriminate against this industry.

* Argument before the Senate Finance Committee.

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The Michigan Central Railroad has for some time past, in connection with its track work, been operating a portable steel rail saw which was designed and built for them by the Industrial Works, of Bay City, Mich. Much remarkable work in cutting off the ends of battered rails has been done with this machine, but the maximum yet reached was a recent accomplishment. On September 12 Mr. J. B. Morford, superintendent of the Canadian Southern division, telegraphed the Industrial Works as follows: "We have beaten the record with our rail saw, having cut and drilled (both ends) 372 rails in 10 hours' service on Tuesday, the 11th inst."

## Machinery of the Steamship City of New York.

So much interest has been centered in the new Atlantic steamer City of New York, of the Inman and International Line, and the ship herself is such a striking example of progress in marine architecture and engineering, that a general description of some of her machinery will, no doubt, prove acceptable. We therefore reprint the following from the London *Engineer*:

The steering gear is Brown's patent, made by Messrs. Brown Bros., of Rosebank Works, Edinburgh. In each of the two main engine rooms is placed one of Brown's hydraulic engines, which supplies a system of mains, traversing the ship fore and aft with water at a pressure of about 1000 pounds on the square inch. The engines are vertical, compound rotative, and pump the water into a steam accumulator: the steam at 150 pounds on the square inch driving down a piston, the thick rod of which plays the part of the ram of an ordinary dead weight accumulator. The pressure water is employed for working the hatch derricks, weighing the anchor, &c., and also for steering.

The City of New York has an enormous rudder, partially balanced, and of peculiar construction. It will be remembered that the ship is on the Admiralty auxiliary list, and in order to render her rudder safe from hostile fire it is wholly submerged. There is no rudder head to be seen from the outside; inside it terminates in the after peak below water-level. It is fitted with a tremendous crosshead or tiller which is operated by two hydraulic rams. Room for these could not be found sufficiently far aft, so they are linked to the crosshead or tiller, as it may be called, by a round steel bar 12 inches in diameter, and about 12 feet long

The rams are about 18 inches in diameter and have tremendous power over the rudder. In order to provide against the effect of shocks caused by the impact of the waves there is a loaded relief valve on each of the hydraulic presses. The water is admitted to either press by valves which are situated near the bow of the ship. These valves are plain slides in a small box, and they are controlled by a tiller about as large as would be used in a 5-ton yacht. The tiller actuates one end of a short lever. The fulcrum end of this lever is controlled by an arm on the vertical spindle of a quadrant which lies under the deck. Two steel wire ropes, each with a breaking strength of 7 tons and stressed to about $\frac{1}{2}$ ton, run from the rudder head to the quadrant. The effect is precisely that of the bunting gear in a steam steering gear. As soon as the steersman puts the tiller he holds to port or starboard the appropriate valve just under his feet is opened. The rudder then moves and through the medium of the wire rope it closes the valve so that the rudder is held in its new position. Another movement of the tiller opens the valve. The corresponding motion of the rudder shuts it again, and so on. Thus the great ship can be steered by a boy. The practice was so novel to the men that it was difficult at first to get a straight course kept by those who had been accustomed to a wheel, and we are told that the best steersman on board was

a quartermaster well up in yacht sailing The engines which supply the hydraulic power are extremely ingenious. One very beautiful device is that by which they are automatically rendered non-compound for half a stroke in order that they may start with certainty after standing. They run quite freely and steady at any speed and for any position of a stroke required to keep the accumulator up. A complete electric plant has been fitted on board, the power being supplied by five engines and dynamos placed on a platform between the two main engines and above the level of the top of the cylinders. These engines and dynamos supply current not only for light but to four large horizontal fans on the hurricane deck driven direct by motors. These fans and motors are located in the tops of ventilating shafts extending down into the depths of the ship from which they draw air. This is, so far as we know, the first time that electricity has been used for ventilating purposes in a ship.

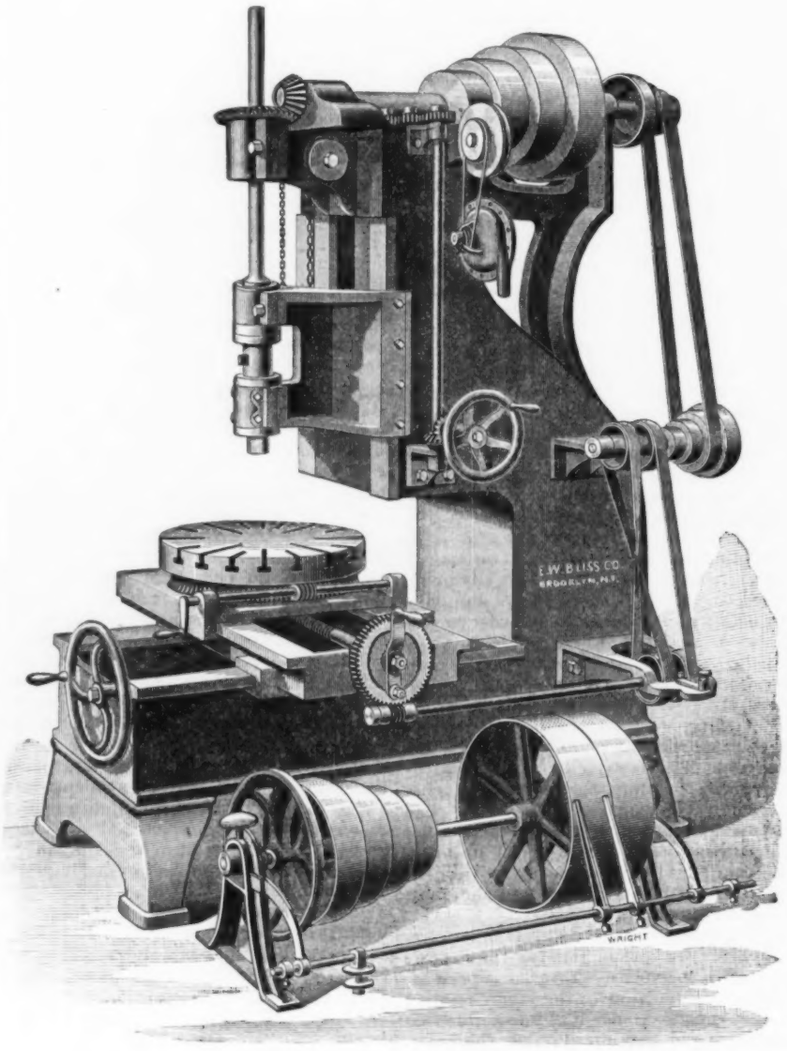
The propelling machinery consists of two of the largest sets of triple-expansion engines afloat. They are of the usual inverted vertical type. The cylinders are 45 in. + 74 in., + 113 in. x 5 ft. stroke. The boiler pressure is 150 pounds. The screws are 22 feet in diameter and 28 feet pitch. They revolve out board, and there is no opening in the dead wood between them. If they worked without slip they would make 218 revolutions to the mile, and at 80 revolutions, which may be taken as the standard speed, the ship would steam at 22 knots. With a slip of about 9 per cent. therefore the speed of the ship would be 20 knots. The engines stand side by side with a longitudinal bulkhead between them. They are in every respect duplicates. A door is provided in the bulkhead opposite the intermediate cranks and the starting platforms are opposite the doorway. The reversing gear is Brown's patent hydraulic. The engines are quite easily started, stopped, or reversed by one engineer on each platform. The engines are wholly of steel and gun metal, save the cylinders. The great "A" frames are splendid castings, each weighing 6 tons—that is, 12 tons for each cylinder. The valves are all pistons—four being fitted to the low-pressure cylinder, two to the intermediate and one to the high-pressure cylinder. The eccentric hoops are cast-steel lined with white metal, as are all the bearings throughout. The valves are disposed in the "corners," so to speak, and the valve-stems are united in pairs by crossheads. They work so smoothly and are so perfectly balanced that the valve gear, which is of the ordinary Stephenson link type, has really very little to do. The surface condensers are horizontal cylinders lying rather high up in the wings. The air pumps are worked by back levers in the usual way. There are no feed pumps on the main engine, the boilers being supplied by five vertical Worthington donkey pumps in each engine room, standing against the forward bulkhead. Two of these pumps will feed the boilers, but the others are for reserve, or for the countless pumping jobs wanted in a big ship. The engines actually employed at any time in feeding the boilers are controlled by an automatic arrangement, a float in the hotwell, rising or falling with the level of the water in the well, and opening or shutting the throttle-valve, an arrangement which is, so far as we are aware, quite new in marine work, and found to answer admirably; the donkey remaining steadily at work instead of tearing away for a few minutes emptying the hotwell, and then having to stand until the well fills again. It would be difficult if not impossible to find more admirable examples of the highest type of mechanical engineering than is supplied by the splendid main engines.

## New Vertical Milling Machine.

Milling machines of various designs have, during the last few years, come into more general use than formerly. Much work that was formerly done on the planer or shaper can be done on a suitable milling machine not only better but much more rapidly. It is also a more economical machine from another point of view, as it does not require such skillful and high-priced labor to run it on a large majority of the work done as does a planer or shaping machine. It has, therefore, come to be considered one of the most efficient of labor-saving machines for general machine shop use.

One of the most recently improved machines of this class we show on this page. It is a very heavy and substantial machine, built with especial reference to convenience of operation. The bed and upright portion are made in one casting and well braced. The upright portion is cored out and provided with shelves and a door, making a convenient tool closet. The table has an automatic cross feed driven by a belt having four changes of speed. Independent circular and longitudinal feeds are also supplied. The cutter spindle is provided with means of vertical and side adjustment not clearly shown in the engraving, and the head which carries the spindle is counterbalanced and is raised and lowered by a screw operated by the hand wheel shown on the side of the machine. A small blower driven from the countershaft by a round belt is attached to the machine, and a flexible pipe is connected with it for the purpose of blowing the chips from the work so that the operator may clearly see and follow the lines marked out on it.

The machine is built in two sizes, the smaller size having a circular table 20 inches in diameter, while that of the larger measures 24 inches, the dimensions of other parts being correspondingly larger. The machine is built by the E. W. Bliss Company, of Brooklyn, N. Y., who have 16 of them in operation in their own works.




NEW VERTICAL MILLING MACHINE, BUILT BY THE E. W. BLISS CO. BROOKLYN, N. Y.

**Wire-Drawing Plate Blanks.**—The Treasury Department has made the following decision in a letter to the Collector of Customs of New York, dated September 18: "Steel-wire drawing-plate blanks which have been forged into the sizes and shapes desired preparatory to their further manufacture and completion for use as 'drawing plates,' but which have not undergone any such further manufacture, are held to be dutiable at the rate of 2½ cents per pound, under the provision in Schedule C (T. I., 167) for 'forgings of * * * steel.'"

The City of Paris, sister ship to the City of New York, is almost ready for launching.

## Government Receipts and Expenses.

The Warrant Division of the Treasury Department has published tables showing the receipts and expenditures of the Government in detail since the year 1856. The table of receipts shows that the largest sum ever collected from import duties was for the year ending June 30, 1882, the amount collected that year being $220,410,730. The nearest approach to these figures prior to the passage of the tariff act of March 3, 1883, was in 1872, when the amount collected was $216,370,287.

The act of 1883 went into operation on July 1st of that year. The question of reducing rates was under discussion before the Tariff commission and in Congress during the entire year, and naturally had some influence on the volume of importations. Yet the receipts for that year fell less than $6,000,000 below those for the preceding year. The legitimate effect of the reduction of 1883 is seen in the receipts for the year ending with June 30, 1884, and show a reduction of $9,600,000 below those for 1883, and over $25,000,000 below those for 1882. There was a further falling off for the fiscal year 1885, when the receipts dropped to $181,471,939, a decline of $39,000,000 compared with 1882, and an excess of $4,000,000 below the reduction which Judge Kelly estimated would attend the passage of the tariff act of 1883, the full force of that act seems to have been reached in 1885. Business was adjusted to the new rates of duty, and, although Mr. Morrison was putting forth an effort to secure horizontal reduction, this effort does not seem to have been seriously regarded by the commercial community, so far as the customs receipts reveal. For the fiscal year 1886 these receipts advanced to $192,905,023, nearly $11,500,000 over those for the preceding year. In 1887 there was a further advance of $24,000,000 compared with 1886, and the figures for 1888 show $1,800,000 in excess of the preceding year.

These figures exhibit striking coincidence, and suggest a variety of combinations that may be used efficiently by advocates of the respective sides of the tariff question. Thus, in 1872 the customs receipts reached a higher figure than ever before. In May of that year an act was passed reducing rates, which went into operation July 1. Following this reduction in rates, we find a falling off in custom receipts of $28,000,000. The reduction steadily continued for the six years following the passage of the act, until they fell for the year, ending with June, 1878, to $130,670,680, a decline of $86,000,000, compared with the fiscal year 1872, the year preceding the reduction in duties. The year 1879 shows an increase of $7,000,000. The following year the receipts rose to $186,522,064; for 1880 they were over $198,000,000; and for 1882, as previously stated, $220,410,730, the highest point ever reached.

The act of 1883 is in like manner marked by decline and subsequent advances in receipts. The tariff reform advocates claim that the act of 1883 did not reduce the revenue. This is true, as may be seen by the Treasury figures. The protectionists claim that reduction of rates is not calculated to reduce, but to increase the revenue by increasing the volume of importations. This is also true, as may be seen by the Treasury figures for the years immediately following the reduction in 1872, when, among other reductions, $13,000,000 per annum was stricken from tea and coffee, as well as for the years since the passage of the act of March, 1883. This is one of those cases where the same figures can be used to prove both sides.

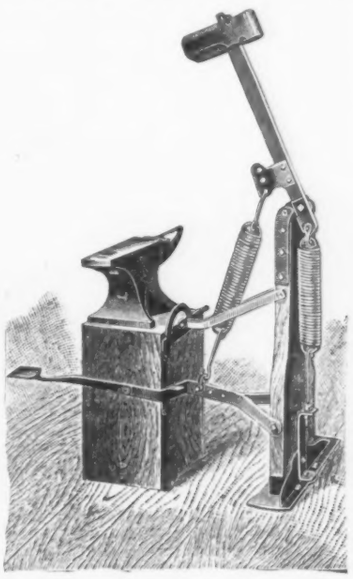
To get the full force of these figures the appended table will prove useful. In it the receipts under the acts of 1882 and 1883 are arranged in parallel columns, starting in each case with the receipts for the year immediately preceding the respective periods:

| Act of 1872. | | Act of 1883. | |
|---|---|---|---|
| 1872 | $216,370,287 | 1882 | $220,410,730 |
| 1873 | 188,089,523 | 1883 | 214,706,497 |
| 1874 | 163,103,834 | 1884 | 195,067,490 |
| 1875 | 157,167,722 | 1885 | 181,471,939 |
| 1876 | 148,071,985 | 1886 | 192,905,023 |
| 1877 | 130,956,493 | 1887 | 217,286,893 |
| 1878 | 130,170,680 | 1888 | 219,091,173 |
| 1879 | 137,250,048 | | |
| 1880 | 186,522,065 | | |
| 1881 | 198,159,676 | | |
| 1882 | 220,410,730 | | |

It will be seen that in both cases the effect of legislation reducing rates of duty was to ultimately increase the aggregate revenue, and this increase is unquestionably attributable to an increase in the quantities of merchandise imported, as will be seen from an examination of the annual reports of the Bureau of Statistics.

## A New Blacksmith's Hammer.

The Ready Striker Hammer Company, of Longmont, Col., are bringing out a new



*The Ready Striker Hammer for Blacksmiths.*

form of hammer, which is specially designed for blacksmiths' use. The engraving which we annex explains its arrangement. It can be attached to any anvil block, and, by one motion of a lever, will shift the hammer to strike from the center of the anvil to the fuller or *vice versa*. The power applied by the foot operates it easily and rapidly, striking either light or heavy at the will of the operator. The two tempered steel coil springs attached to the handle on each side of the axle impart elasticity to the hammer, enabling the operator, it is claimed, to perform more and better work than is possible with the hand striker, and with a considerable saving.

The Viceroy of Canton, in a letter to the Emperor, declares that kerosene oil is responsible for nine-tenths of all the fires in the empire, and remarks that if America "can prohibit our going there because labor is injurious to their interests, we have an equal right to prohibit the importation of kerosene when it is injurious to us."

Immigration at the ports in the United States for August numbered 35,812, against 37,308 for the corresponding month last year. Germany contributed 8427, England and Wales 6608, Ireland 4441, and Scandinavia 4000.

## The Wheeling Steel Works.

The Wheeling Steel Works, at Benwood, near Wheeling, W. Va., were built in 1886 to supply three of the nail mills of the Wheeling district with slabs for nail manufacture. The general arrangement of the plant was on the lines first developed by Mr. Robert Forsyth, of the Union Steel Company, Chicago, the principal feature of which is the transfer of the casting operations into a special pit. The two converters, which usually blow 12,000 pounds of metal, are placed side by side in front of a pit, commanded by a central crane. The latter has a telescopic arrangement by which it receives the iron car, into which the iron is run from the three 8-foot cupolas, placed along the outside of the pit. In this manner the converters are entirely free from all encumbrances in the form of runners, &c. The same central crane receives the steel ladle, from which, by the same telescopic arrangement, it is pushed along a short track, which connects the converter-pit with the ingot-pit, the latter being commanded by a central crane. The plan at Wheeling provided for a possible addition of two more converters, so that the two now in are placed on one side of the center line of the building.

The iron as it comes from the cupolas carries about 1.4 per cent. of silicon, and the steel produced contains from 0.05 to 0.08 of carbon and about 0.35 per cent. of manganese, the ferromanganese being preheated. The ingots for slabs run about 4000 pounds, and those for billets 3000 pounds, the maximum output per day having been about 4500 tons, while the weekly average is 2000 tons of soft steel. The ingots are placed upon trucks, and are switched by a locomotive on the track which puts them within the range of the heating furnace cranes. The reheating is done in two pits, with three holes each for four ingots. The company have been forced to return to the use of producer gas for all purposes, except drying ladles and bottoms. Like the other manufacturing establishments of Wheeling, who were the first to give the two natural gas companies encouragement, they have found themselves promptly sacrificed to the demands of domestic consumers on the first signs of shortage. It has been a matter of frequent occurrence, especially in the winter, to have the supply curtailed, and at times entirely cut off. The Wheeling Steel Company have, therefore, for some time past, given up the use of natural gas except for the purposes named.

The reheated ingots are carried by a buggy to the blooming mill, a 36-inch MacKintosh, Hemphill & Co. mill with tables, driven by a 40 x 48 inch Southwark reversing engine having a piston speed of 1200 feet on ordinary work. The billets and slabs are sheared by a shear built by the Morgan Engineering Company, of Alliance, Ohio, which has a capacity of 120 square inches. The shear is located close to the end of the building, the slabs or billets being delivered outside of it upon cars standing on a track. They are pushed under a spray of water and switched back to a point where they are loaded on railroad cars.

Blast is furnished for the works by an E. P. Allis engine having a 36-inch steam and a 48-inch blowing cylinder and a 5-foot stroke. The engine is of special design with fly-wheel and rocker and is pronounced by John E. Fry, the general manager of the works, a particularly efficient piece of machinery.

A Swedish engineer, M. Lundberg, says a foreign exchange, has constructed a railway car, which, in a few minutes, may be adapted to five different gauges, the narrowest being 0.890 m. The invention has been patented in several foreign countries.

## The New York Subways.

At the recent convention in this city of the Telephone Exchange Association, Mr. L. F. Beckwith, of the New York Subway Construction Company, gave some interesting facts on the New York subways. He said that, with the exception of the Edison, they are all built on the "drawing-in" system, being groups of ducts extending between a series of manholes. He believed experience had shown that a main conduit of separate pipes that may be crowded or curved or kept apart is best adapted to overcome the many obstacles met with in the ground. Screw-jointed, asphalted wrought-iron pipes, laid preferably in hydraulic cement concrete, give most tightness of duct against gas and water with greatest strength. The cement-pipe and creosoted wood tubes have also some valuable features. In some places they had met a steam-heating company's pipes and had great difficulties because of them, the steam constantly escaping, and, therefore, not permitting the use of materials of construction melting or softening at from 160° to 200° F. Non-metallic and metallic ducts 5 miles long have been purposely constructed, that the telephone people may have a chance to experiment as to their influence on low tension currents. The work done up to the 1st of the present month is here given:

| | |
|---|---|
| Dorsett ducts, coal tar concrete, feet | 235,837 |
| Zinc tubes laid in hyd. cement concrete, feet | 68,883 |
| Creosoted wood tubes, feet | 167,175 |
| Cement pipe laid in hyd. cement concrete, feet | 216,626 |
| Iron pipe laid in asphaltic concete, feet | 131,284 |
| Iron pipe laid in hyd. cement concrete, feet | 1,423,722 |
| Iron distributing pipe, feet | 23,301 |
| Edison iron tubes, feet | 222,794 |
| Grand total length of single duct, feet | 2,489,602 |
| Grand total length of single duct, miles | 472 |
| Grand total length of trench, miles | 37 |
| Number of manholes | 523 |
| Total length telephone and telegraph ducts, miles | 376 |
| Total length electric light ducts, miles | 96 |
| Length of telephone and telegraph trenches, miles | 19½ |
| Length of special electric light trenches, miles | 17½ |

About 750,000 feet of single duct for telephone, telegraph and electric-light purposes authorized by the Board of Electrical Control remain to be built. For telegraph purposes an iron pipe from a manhole connects underground with a building or with the foot of a pole. For telephone purposes the above method is used, and a pipe runs up the face of a building to the roof, where from a fixture the cable is divided for distribution on the block and surrounding blocks. Sometimes the pipe is carried up through an elevator or ventilating shaft. In the down-town district and along Broadway to Union Square an iron 3-inch pipe is laid in the trench above the subway, provided at intervals of about 50 feet with malleable-iron circular distributing or service boxes with screw covers 12 inches in diameter, with side outlets through which a cable can be conducted by a service-pipe into the buildings.

For electric light distribution the Edison Company have their special system laid. A cast-iron distributing conduit with six ducts and flush boxes has been authorized to be laid in Broadway from Fourteenth street to Thirty-fifth street. Up to August 27, 1888, there were 3567 miles of wire laid in the subways by the Metropolitan Telephone and Telegraph Company, and 100 wire lead-covered cable from Whitehall street to Fifty-eighth street, about 6 miles, and the longest of this size in existence under ground. The Western Union Company have about 100 miles of wire underground, and the Edison about 126. The Brush Company are putting an eight-conductor cable in the Broadway conduit from Fourteenth street to Thirty-fifth street, making 8 miles of electric arc light wire.

## A Copper Producer on the Syndicate.

Joseph W. Clark and A. S. Bigelow have affixed their signatures, as president and treasurer, to the annual report of the Tamarack Mining Company. Their remarks on the position of the syndicate are interesting as reflecting the views of the producers. We quote the following passages:

It is evident that it is of almost vital importance to the entire copper producing interest of this country that the utmost harmony should exist in handling the rapidly increasing product of our mines. Our recent sale of 50,000,000 pounds to the Société Industrielle and Commerciale des Méteaux, was the first of the great sales made by our mines to the French company, and, followed by the larger transaction of 100,000,000 pounds by the Montana company, with which we are intimately connected, enabled us in a good degree to promote, if not direct, these enormous operations. Transactions of such magnitude had, up to that time, never been recorded on the metal exchanges of this country or Europe. As we anticipated, they led directly to the consolidation and control of the product of all the great mines of the world. The inauguration of this most comprehensive system of mutual oversight, control of the product, and manipulation of these products, seems to us almost vital to their well being. The stimulus of present prices will necessarily lead all parties to crowd to their utmost all their energies in the line of production, and if this output is thrown upon the market without control it will surely result in disaster, while under the present ownership and management, it will not be difficult to compel an equitable distribution. With this ultimate object in view, the policy of the recent organization of the western sulphuret mines has been largely shaped.

It is hoped that these points, which must have prominence in the early future, will not be lost sight of. Very much has been said in the public prints about the falling off of consumption since the rapid advance in price last year, caused chiefly, it is alleged, by the operations of what is called the "French syndicate." We doubt if these statements and impressions are correct, for, although the statistics of the world's production and consumption of copper may be tolerably well in hand, we are well assured that great error and misconception prevails with the public in these matters. For instance: the statement that the consumption of rolled or sheet copper has been greatly checked by this advance is an error, for the best of reasons, that no such advance has been made. The price of rolled copper has, for a long time, been fixed by an association of the rolling mills, and fluctuations are rare where the statistics are fully discussed and conclusions reached in view of supply and demand. At no time has the price of sheet copper had a market price at all to be compared with ingot, when it was forced to the abnormal price of 10 cents, as it was last year. These facts hold also with other special brands of manufactured copper.

Another still more important error prevails with regard to the normal price of copper for the past ten or more years. It has been held up to the public that the unholy operations of the French syndicate have forced the normal price of copper from the low figure of 10 cents to the present price of 16½, and thereby checked the consumption to an alarming degree. When looked at from a producer's standpoint, the real facts, as proved by actual sales of one of our large mining companies, show for 15 consecutive years that sales have averaged over 15 cents.

We have pleasure in stating our growing confidence in the stability and integrity of the syndicate. We have done what we could by the way of inquiry, and we have no hesitation in saying that our mature judgment has the unqualified approval of our policy in the sale of our entire product for three years. The financial backing of this concern is enormous, and, so far as we are concerned, there would seem to be nothing wanting. The security of our credit is ample and perfect

It is probable that the company to which reference is made in the report quoted above is the Osceola. We append below a copy of the record of their sales and the prices realized:

*Sales of Copper and Average Prices by the Osceola Mining Company, 1874 to 1887.*

| Years. | Sales. Pounds. | Average price. Cts. per pound. | Years. | Sales. Pounds. | Average price. Cts. per pound. |
|---|---|---|---|---|---|
| 1874 | 936,002 | 23.37 | 1881 | 4,176,976 | 17.77 |
| 1875 | 1,330,313 | 22.77 | 1882 | 4,179,782 | 17.70 |
| 1876 | 1,693,737 | 20.57 | 1883 | 4,256,409 | 14.96 |
| 1877 | 2,774,777 | 18.19 | 1884 | 4,247,630 | 12.82 |
| 1878 | 2,705,998 | 15.53 | 1885 | 1,639,169 | 10.75 |
| 1879 | 3,197,387 | 17.79 | 1886 | 3,560,786 | 10.51 |
| 1880 | 3,381,061 | 19.15 | 1887 | 3,583,723 | 11.86 |

It is time that these sales for a period of 14 years show an average of 16.77 cents, though it is probable that the Osceola did better than the average, because it was never in the export pool. Yet the Tamarack report itself contains a refutation of the argument for present prices. The company produced 10,389,867 pounds of ingot copper in the fiscal year from 144,412 tons of rock stamped, yielding 3.6 per cent. of copper at a cost of 5.75 cents laid down in New York, sold, selling the copper at an average of 13.95 cents. The pluck of those who sunk a shaft over 2000 feet deep on the chance of finding the Calumet and Hecla conglomerate in depth undoubtedly deserves ample rewards. The company paid $330,000 for its territory, and spent $497,806.37 for construction and development, assuming that additional sums are necessary to carry the capital expenditures to $1,000,000. Granting 25 per cent. per annum as an ample profit on a mining venture—a profit of $250,000 per annum on an output of 15,000,000 pounds—which the plant is capable of handling, this profit would represent less than 1.75 cents per pound. In other words, with copper at 7.5 cents per pound, the Tamarack Company would be making 25 per cent. on an investment of $1,000,000.

Another fact is not taken into account by those who point to averages of selling prices over a series of years to justify present prices, and that is the decline in the cost of production. We may cite the Quincy mine. In 1875 its cost was 15.79 cents a pound. In 1881 it had dropped to 10.03 cents, and in 1886 to 6.78 cents. Similar figures could be adduced for other mines They are the results of the introduction of high explosives and rock-drills in mining, of improvements in transportation, machinery, stamping and dressing, of lowering of supplies and fuel. It is, therefore, unfair and misleading to quote averages over such a period of progress to support claims for high prices now.

Speculation in the Argentine Republic has broken out afresh, advices from Buenos Ayres to September 1 say: "The gold premium has begun to fall steadily, chiefly owing to the very large amounts of specie that arrive by every packet from England. It is calculated that 40,000,000 gold dollars will be the sum total of the influx of specie during the second half of this year, and with such an avalanche of the precious metal the premium must necessarily fall headlong. The whole market is now on the incline and the premium is expected to fall to 30 per cent. next month. These large gold remittances from Europe find their direct cause in Minister Pacheco's Free Banking Act, which has revolutionized the financial system of all the interior provinces. All the local Governments are in a hurry to avail themselves of the advantages of the act to start national banks in their respective provinces, and hence the motley array of loans of Argentine States in the London and Paris markets."

By the bursting of a reservoir across a ravine near Valparaiso many lives were lost, and property valued at $3,000,000 was destroyed.

## The Goulds Hydraulic Test Pumps.

The Goulds Mfg. Company, of Seneca Falls, N. Y., are putting on the market a number of newly designed hydraulic test pumps, of which we present engravings on this page.

Fig. 1 represents a gun-metal pump for testing boilers, tanks, pipes, &c., to 1000 pounds pressure per square inch, if necessary. As the cistern only holds about 2 gallons of water, the thing to be tested should first be filled by other means, and the tester then applied to supply the balance and work up the pressure. The weight of the pump is about 40 pounds. Fig. 2 shows the same design of pump mounted on a strong wood barrow with a cast-iron tank underneath for portable use in the many services which these pumps can perform. This combination is one of great utility.

In Fig. 3 we show a third design. This pump has a revolving top, admitting its being worked in any position, and a sectional lever, which can be changed to give greatest leverage. The suction and discharge valves (flanged and bolted to cylinder) are of a new and improved type, with brass valve seats, poppets and caps. The pump should be placed within short suction distance of water, or on a level

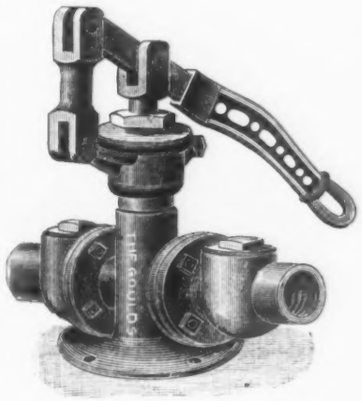



*Fig. 3.—Pump with Revolving Top.*

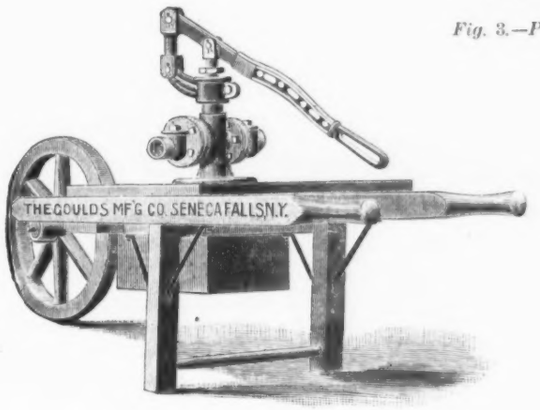



*Fig. 2.—Test Pump on Barrow with Tank.*

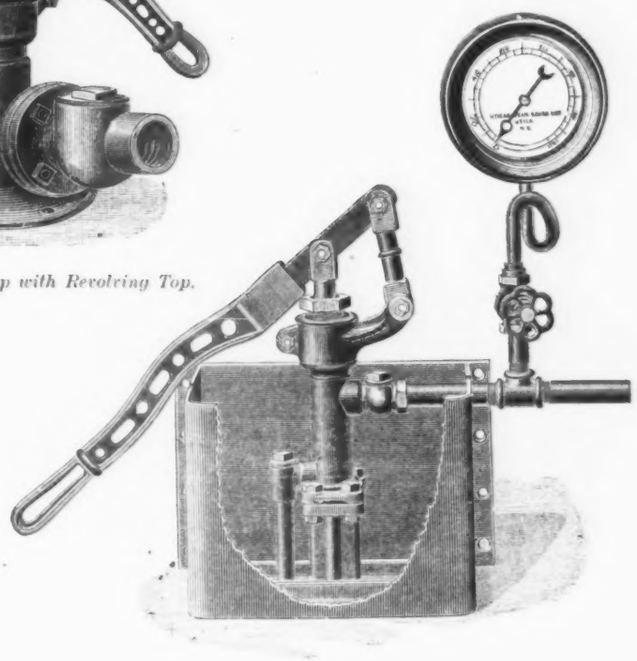


*Fig. 1.—Test Pump with Tank.*

IMPROVED HYDRAULIC TEST PUMPS, BUILT BY THE GOULDS MFG. COMPANY, SENECA FALLS, N. Y.

with it, and will be found invaluable to the boiler-maker or user for testing the condition of boilers, vessels, &c., as for cleaning out pipes, &c., &c. It will generate a cold-water pressure of 500 pounds per square inch.

## The Brooklyn Subways.

Mr. W. D. Sargent, engaged in constructing the Brooklyn subways, has contributed to the proceedings of the Telephone Exchange Association a paper on the subject, which was presented at the recent New York meeting. He says the first section of the creosoted wooden conduits, which have been used four years, do not show any evidences of decay, the ducts remaining clean and dry, and the cables drawing in and out easily. Three-inch ducts he thinks the best. Of the cables laid four years ago, those covered with pure lead have been more than half eaten through. One just drawn out, and only two years buried, is badly corroded. Those with a mixture of tin show only slight corrosion. He thinks that if, in addition to the tin, cables were drawn through a bath of gas tar or asphaltum, then covered with a good stout braid, and again run through the bath, they would be practically imperishable. The greatest length of cable now under ground in Brooklyn is 11,800 feet, between the Bedford and Williamsburgh offices, of 100 wires, twisted in pairs, the pairs broken up at all the splices, conductors 0.035, insulated to 0.075. The insulation of this cable is 39 megohms per mile; capacity, 26 microfarads; resistance of the construction, 47 ohms per mile. The electrical qualities of this 2 miles cable are: Insulation, 50 megohms; capacity, 52 microfarads, resistance of conductors, 94 ohms. There have been and still are many complaints of the imperfect working of this cable, but he is inclined to attribute the trouble to other causes rather than inefficiency on the part of the cable itself. The Dorsett conduit, of which much was expected, he says, has proved very unsatisfactory. They have 5 miles of it, with ducts 2 inches in diameter, and these, because of irregularities at the joints, will only permit of a cable 1¼ inches in diameter being drawn in.

As the mileage of underground wire increases, the obstacles in the way of good service will be increased. The actual extent of the Brooklyn underground wires was on September 10:

| | Miles. |
|---|---|
| Length of conduit | 15.17 |
| Length of duct | 105.5 |
| Length of cable | 22.93 |
| Length of conductor | 2,053.3 |

Nineteen hundred and thirteen subscribers are using underground wires, the length of the latter being 1229.9 miles.

Although there are still some persons who believe—and perhaps the wish is father to the thought—that the great vessel designed by Brunel will not come to such an inglorious end, there is very little doubt that she will be broken up and her fragments sold as old iron. After having passed through so many vicissitudes for the 30 years of her existence the Great Eastern was successfully beached near New Ferry, on the Cheshire shore of the Mersey, England, on August 25.

## The Canadian Northwest Territories.

By act of October 7, 1876, the territories formerly known as Rupert's Land and the Northwestern Territory, with the exception of Manitoba, were created into a government by the Canadian Parliament. The territories were divided, in 1882, into four districts—viz., Assiniboia, Saskatchewan, Alberta and Athabasca. Regina, the capital, is in the district of Assiniboia. Free grants of land of 160 acres can be obtained. It is estimated that the territories have over 150,000,000 acres of land suitable for cultivation and awaiting settlement. The total area of that part of the Dominion exceeds 1,250,000 square miles, but in this area of the Great Mackenzie Basin are not included any of the islands of the Arctic Archipelago. The coast line on the Arctic Ocean and Hudson's Bay, exclusive of inlets, is 5000 miles long. Over one-half of this coast line is accessible to whaling and sealing craft.

The total area of the lakes probably exceeds that of the Eastern Canadian-American chain and the navigable coast line of the larger lakes of the region is about 4000 miles. There is river navigation in the region to the extent of 2750 miles, half of which is suitable for stern-wheel steamers, which, with barges, may carry 300 tons; the other half is deep enough for light draft seagoing steamers. A total of 6500 miles of continuous lake and river navigation is broken in two places. One of these occurs on the Great Slave River, and to overcome it a 20-mile wagon road is now under construction from Fort Smith southward. The other break consists of 70 miles of the Athabasca River, above Fort McMurray. In these 70 miles rapids are unpleasantly numerous; flat boats can descend, but cannot ascend them.

The immense lacustrine area of the northern and eastern portions of the terri-

tory implies the future supply of a great part of the North American continent with food fish. Salmon are found in four of the rivers which empty into Hudson's Bay on the western shore, and in all of the rivers flowing into the Arctic Ocean, except the Mackenzie, in which the "inconnu" exists in great numbers. The presence of the capeling on the coasts of the Arctic Ocean and Hudson's Bay is supposed to imply the presence of the cod on these shores. In the great Mackenzie Basin there is believed to be a possible area fitted for the growth of potatoes of 650,000 square miles; suitable for barley, 407,000 square miles, and suitable for wheat, 316,000 square miles. The pastoral area is placed at 860,000 square miles, of which 26,000 are open prairie. Including the latter, 274,000 square miles may be considered arable. Of the total area, 400,000 square miles are useless for the pasturage of domestic animals or for cultivation. The forest area contains the liard, a balsam poplar, which attains a growth of 120 feet in hight and a stump diameter of 6 feet; the white spruce, 150 feet high, with a stump diameter of 5 feet; the larch, of about the same size, and the banksian pine, which has a straight stem 100 feet high, with a stump diameter of only 2 feet.

## NEW PUBLICATIONS.

POOR'S MANUAL OF RAILROADS, 1888. By Henry V. Poor. Published by H. V. & H. W. Poor, 70 Wall street, New York.

Poor's well-known manual has been again issued with all its leading features, to which has been added a directory of railway officials. We may quote the following figures from Mr. Poor's usual summary, since they convey an idea of the magnitude of railroad interests:

| | Miles. |
|---|---|
| Length of track laid up to December 31, 1887 | 149,912.70 |
| Of which were completed up to the close of the fiscal years of the respective companies | 147,998.60 |
| Completed since close of their fiscal years | 1,914.10 |
| Increase of mileage in the calendar year 1887 (9.6 p. c.) | 13,080.75 |
| Increase of mileage in the fiscal year 1887 (9.7 p. c.) | 14,392.04 |

*Liabilities and Assets of the Companies owning the above* 147,998.60 *Miles of Line.*

Liabilities.

| | |
|---|---|
| Capital stock | $4,191,562,029 |
| Funded debt | 4,186,943,116 |
| Unfunded debt | 294,682,071 |
| Current debt | 223,243,998 |
| Total liabilities | $8,896,431,214 |

Assets.

| | |
|---|---|
| Cost R. R. and equipment | $7,799,471,835 |
| Real estate, stocks, bonds and other investments | 984,975,945 |
| Cash, bills receivable, current accounts, &c. | 415,506,735 |
| Total assets | $9,199,954,515 |
| Excess of assets over liabilities | $303,523,301 |
| Excess of assets in various States | $441,410,306 |
| Excess of liabilities in various States | 137,887,005 |
| | $303,523,301 |

| | Miles. |
|---|---|
| Total mileage of railroads completed at close of fiscal years | 147,998.60 |
| Of which full statistics of operations were received from | 136,986.49 |
| Mileage of roads not reporting earnings, &c., consisting chiefly of new roads not yet brought into full operation | 11,012.11 |

In 1887 the greater portion of the new mileage was built in the last six months of the year, and consequently had not been brought into operation until the year 1888.

| | |
|---|---|
| Miles operated | 136,986.49 |
| Passenger train mileage | 238,755,920 |
| Freight train mileage | 394,191,107 |
| Mixed train mileage | 11,031,869 |
| Total train mileage | 643,978,896 |
| Passengers carried | 428,225,513 |
| Passengers—Mileage | 10,570,306,710 |
| Tons moved | 552,074,752 |
| Tons one mile | 60,061,069,996 |
| Earnings.—Passengers | $240,542,876 |
| Freight | 636,666,223 |
| Other | 54,176,055 |
| Total | $931,385,154 |
| Operating expenses | 600,249,478 |
| Net earnings | $331,135,676 |
| Other receipts, including rentals received by lessor companies | 83,164,355 |
| Total available revenue | $414,300,031 |

Payments from Available Revenue:

| | | |
|---|---|---|
| Interest on bonds | $195,418,710 | |
| Other interest | 6,590,200 | |
| Dividends | 90,613,458 | |
| Rental | 42,042,277 | |
| Miscellaneous | 41,168,903 | |
| | | $375,233,548 |
| Balance—Excess of available revenue over actual payments therefrom for the year | | 39,066,483 |

One of the most valuable compilations of the present volume is that with reference to the average rates of freights per ton per mile for each year. As it would be impossible to make a fair comparison of the average rates of all the roads, two representative groups have been selected for this purpose. The Eastern group embraces the Pennsylvania, Pittsburgh and Fort Wayne, New York Central, Lake Shore, Michigan Central, Boston and Albany and Erie. The Western group embraces the Chicago and Alton, the Burlington and Quincy, the St. Paul, the Northwestern, the Rock Island and the Illinois Central. The tables of the aggregate tonnage carried 1 mile by these two groups show that in the 20 years from 1865 to 1885 the average rates of freight were reduced to about one-quarter of what they were in 1865. On the Eastern group the rate per ton per mile was reduced from 2.900 cents to 0.636 cents, with an advance to 0.718 cents in 1887 on the roads running east from Chicago. On the roads west from Chicago the rate was reduced from 3.642 cents in 1865 to 1.014 cents in 1887. During the same time there was an increase in the aggregate freight carried per ton per mile from 1,639,316,859 tons in 1865 to 13,543,351,451 in 1887 on the Eastern system, and from 513,421,459 in 1865 to 7,776,436,486 in 1887 on the Western system. The following shows the tons carried 1 mile and the rate per ton per mile on each system for each of the 23 years, ending with 1887:

| Year. | —Eastern system.— Aggregate tons—miles. | Rate pr. tn. pr. m. | —West. system.— Aggregate. | Rate per mile. |
|---|---|---|---|---|
| 1865 | 1,649,216,859 | 2.900 | 513,421,459 | 3.642 |
| 1866 | 2,044,416,231 | 2.503 | 576,888,638 | 3.459 |
| 1867 | 2,258,216,174 | 2.305 | 768,171,050 | 3.175 |
| 1868 | 2,541,578,620 | 2.132 | 893,856,974 | 3.151 |
| 1869 | 3,159,832,219 | 1.860 | 1,054,559,835 | 3.026 |
| 1870 | 3,685,824,803 | 1.593 | 1,234,078,291 | 2 423 |
| 1871 | 4,340,131,068 | 1.478 | 1,233,058,058 | 2.569 |
| 1872 | 5,081,263,127 | 1 504 | 1,337,098,063 | 2.324 |
| 1873 | 5,762,062,724 | 1.476 | 1,710,496,690 | 2.188 |
| 1874 | 5,879,662,649 | 1.332 | 1,851,645,825 | 2.160 |
| 1875 | 5,935,242,597 | 1.161 | 1,904,937,377 | 1.979 |
| 1876 | 6,739,527,502 | .985 | 1,994,712,255 | 1.877 |
| 1877 | 6,536,997,523 | .971 | 2,211,021,475 | 1.664 |
| 1878 | 7,855,222,563 | .898 | 2,822,885,886 | 1.476 |
| 1879 | 9,594,719,693 | .764 | 3,470,822,877 | 1.279 |
| 1880 | 10,313,056,759 | .869 | 4,107,610,830 | 1.389 |
| 1881 | 11,560,001,888 | .763 | 4,498,641,451 | 1.405 |
| 1882 | 11,191,066,104 | .756 | 5,040,239,952 | 1.364 |
| 1883 | 11,326,271,886 | .829 | 5,768,109,279 | 1.310 |
| 1884 | 10,719,521,813 | .740 | 6,093,282,749 | 1.220 |
| 1885 | 11,331,309,298 | .636 | 6,500,185,261 | 1.158 |
| 1886 | 11,915,435,513 | .711 | 6,806,148,918 | 1.111 |
| 1887 | 13,543,351,451 | .718 | 7,776,436,486 | 1.014 |

The statement of gross and net earnings per mile, as affected by this steady reduction of rates, does not extend further back than 1884, but it shows at least that in the three years 1884–87 there was an increase in the net earnings per mile, notwithstanding the reduction of rates. The gross earnings per mile on all the railroads in the United States declined from $6663 in 1884 to $6265 in 1885, increased to $6570 in 1886 and $6861 in 1887. Net earnings per mile decreased from $2318 in 1884 to $2185 in 1885, increased to $2376 in 1886 and $2444 in 1887, showing that notwithstanding the reduction in rates from 1884, the heavier tonnage more than made good any losses from that source. The increase of net earnings per mile in 1887 over 1884 was $126, or $5\frac{43}{100}$ per cent. concurrent with a reduction of about 3 per cent. on the average rates on the Eastern roads, and about 17 per cent. on the Western roads.

## The Senate Finance Committee's Tariff Bill.

[*By Telegraph from our Washington Correspondent.*]

The Senate Committee on Finance, having completed their substitute for the House bill to reduce taxation and simplify laws in relation to the collection of the revenue, reported it to the Senate today.

It strikes out all after the enacting clause and inserts 162 pages of new matter, beginning with tobacco, imposing a special tax of $3 a year on manufacturers of cigars, and otherwise modifying and repealing certain internal revenue taxes.

It then takes up the import schedules, making more or less modification, observing the theory of protection throughout.

Iron ore remains at 75 cents a ton, with no deduction on account of moisture chemically or physically combined with it

Iron in pigs, iron kentledge, spiegeleisen, wrought and scrap iron and scrap steel, three-tenths of 1 cent, but nothing shall be deemed scrap iron or scrap steel except waste in actual use and only fit to be manufactured.

Railway bars made of iron and steel, seven-tenths of 1 cent a pound.

Hoop iron or steel duties are regulated so that when cut to lengths for baling it shall pay two-tenths of 1 per cent. per pound more than the ordinary material.

In sheets of iron it is provided that all common or black sheet iron or steel not thinner than No. 10 wire gauge shall pay duty as plate iron or steel.

Wire rods smaller than No. 6 wire gauge shall be dutiable as wire.

Steel ingots and steel in forms not enumerated shall pay from $\frac{5}{10}$ cent to $3\frac{1}{2}$ cents a pound, [*remainder of sentence indistinct in telegram*].

All metal produced from iron or its ores by the various modern processes of making steel is denominated steel.

The metal schedule embraces 79 paragraphs, which are more an adjustment of duties, application of modern commercial terms and unification than a change of rates.

The Senate Committee have omitted tin plate from the bill to await information from the New York Custom House. An amendment placing a protective duty of $2\frac{15}{100}$ cents a pound will be introduced pending the debate.

# THE WEEK.

An inventor named W. C. Wren, residing in Brooklyn, was suffocated by gas in his bed-chamber. After experimenting for years to discover an improved process of making gas from petroleum he invented a machine, the patent for which he sold for $100,000. Members of the family say that nearly all this sum was expended in defending his rights in the courts. He was also the inventor of a machine for making ice.

The State Railroad Commission propose the adoption of a uniform steam-coupler, in order to obviate the chief difficulty encountered in the attempt to introduce steam-heating apparatus in railway cars, and invite all interested to attend a conference at Albany, October 16.

Great excitement was caused among members of the Produce Exchange on Monday by rumors that the Gratuity Fund of the Exchange had suffered from frauds similar to those recently committed by James E. Bedell. After investigation, the Register of New York discovered fraudulent mortgages to an aggregate of $215,000. Thereupon orders were issued for the arrest of Wm. R. Foster, Jr., for many years counsel for the Produce Exchange and for the Gratuity Fund since its inception, six years ago. The manner in which Mr. Foster enriched himself was by pretending to loan the money upon mortgages, which were in reality forged, and was precisely the same method as that described lately in connection with the Bedell forgeries. The Gratuity Fund had on hand, when the last report was made, a surplus of $1,138,573.96, so that it will not be greatly embarrassed by its present losses. Whether Foster has spent the money or invested it for his own profit is a matter of speculation. He is a man of 45 years of age, and unmarried, and was not known to have any vices or extravagant habits.

Professor Pitt claims to have discovered a cheap process of desulphurizing the heavy oils of Ohio, which converts ordinary crude petroleum into a "water white," and burns as well as the best refined. An almost worthless substance is thus made valuable.

A combination has been made between the firm of Lombard & Ayres, of New York, and the Ocean Oil Company and the Chester Oil Company, of Philadelphia, by which the latter companies purchase the refineries of Lombard & Ayres at Bayonne, N. J. The price is said to be about $2,000,000. Lombard & Ayres were the largest individual refiners in the country. The result will be the removal of the Tidewater Pipe Line Company's headquarters to New York City, as that company control the Chester and Ocean refineries. The Tidewater pipe lines run from the upper oil region to Bayonue, and the Ocean Company's works are at the latter place also. The Chester Company's plant will also be removed to Bayonne.

Work will soon commence on the new armory near Ninth avenue and Sixty-seventh street, for the Twenty-second Regiment. The structure will cost $300,000.

A sensation was caused on the New York Produce Exchange by the sudden death on Saturday of Abram S. Jewell, one of its best known members and twice a highly esteemed president.

The tools used by Japanese farmers are described by one who recently witnessed the processes of rice culture. Bullocks drawing long-toothed harrows were engaged in tearing up the old stubble. Wooden plows were also at work, mere stirring-up implements of wood, with one handle. They had a rounded nose, fortified with an iron chisel, point beveled downward. Then there was a rude plow with broad iron share for turning a shallow furrow and heavy oblong hoes for working the soil over and over. Grading scoops completed the ground utensils, but for shaping the causeways or narrow dykes between the fields the coolies used the usual hand weapons. A little Yankee ingenuity would soon introduce marvelous changes in these ancient methods.

The proposed bridge across the Hudson at Anthony's Nose is again coming into prominence, as a consequence of the now assured success of the bridge at Poughkeepsie. At the point selected for crossing, just above Peekskill, the river narrows down to a width that permits of a single span reaching from shore to shore. The plans contemplate a structure modeled after the great Brooklyn Bridge, but with a single span 3000 feet long, 195 feet above high water mark and suspended from steel towers 320 feet high and resting on natural granite foundations. Gen. Edward W. Serrell, civil engineer and president of the Highland Bridge Company, is authority for the statement that the enterprise is backed by abundant capital, and it is expected to complete the structure ready for traffic within two years. General Serrell claims important advantages for a bridge at Peekskill, as compared with the one at Poughkeepsie, in its proximity to New York city and in the shorter line of transportation offered between New England and the Pennsylvania coal and iron mining regions.

Respecting business in the Canadian province of Quebec, Mayor Latallier, of the city of Quebec, takes a rather desponding view. He is reported as saying that the province is not advancing: "The enterprise of Quebec is shown by the French-Canadian population, and through the manufacture of boots and shoes and several other industries of the St. Roch and St. John suburbs we keep our heads above water. Throughout the province, I regret to say, the present tendency is to fall back. Montreal is not advancing. She may be barely holding her own, but that is all. I refer to her commercial growth. The rural communities are losing. Emigration to the States, where the young men do well, is sapping the life-blood of the province. The Northwestern emigration is also carrying away the agriculturits, but it is to the States that the exodus is the strongest in its tide. Every young man who prospers across the border is an agent of emigration. He fills the mind of his brothers and sisters, even of his old father, with discontent with the farm and home life. Young men will go to New England and take up farms abandoned by their American owners, and will, under the existing conditions, prosper on them."

It is affirmed of the Melbourne Exhibition that it is a great success.

Peter Bergstrom, proprietor of an iron foundry at 179 Plymouth street, Brooklyn, was testing a new boiler on Friday when it exploded. His face and head were badly torn by the flying metal, and he died before he could be removed to the hospital.

Engineers appointed by the Government have selected a site for a dry dock at League Island navy yard. The dock will be 500 feet long and cost about $500,000.

Canada has an ad valorem tariff, and complains of undervaluations of the imports from the United States. Our Bureau of Statistics makes the total of our exports to Canada in 1887 $33,495,403 of domestic merchandise and $2,666,944 of foreign merchandise. The Canadian authorities appraised the value of imports from the United States during that year at $44,802,732. This indicates an average and systematic undervaluation upon our part, as viewed by the Canadian authorities, of about 25 per cent.

An explosion of sulphuric acid, shipped as express matter from New York on board the steamer Eolus, took place off Gould Island, and the crew were nearly suffocated by the fumes before the flames could be quenched. One of the engineers afterward died.

The bank examiner of Massachusetts demanded the resignation of Cashier Chapin on account of losses on irregular securities to the amount of $30,000, mostly to the Beattie Zinc Company.

A new way of annealing small pieces of steel is given by a writer in the English *Mechanic*. Heat the piece as slowly as possible, and when at a low red heat put it between two pieces of dry boards and screw them up tight in a vise. The steel burns its way into the boards, and, on coming together around it, they form a practically air-tight charcoal bed. When it cools off the steel is apt to be found thoroughly annealed.

Opinions obtained by the officials of the Chicago, Burlington and Quincy, the St. Paul and the Rock Island Railroads on the question of the lower rates ordered into effect by the Railroad Commissioners of Iowa, are that the United States Circuit Court, through Judge Brewer, has enjoined the lawmakers of Iowa from making rates, at least until the question has been decided by the United States Supreme Court; consequently the railroads will follow their own inclination for some time to come.

The total quantity of wool exported from Australasia from the 1st of July, 1887, to the 30th of June, 1888, as shown by the official report, was 1,283,350 bales, against 1,185,282 for the corresponding period of 1886–87; thus showing an increase of 98,068 bales. The United States received nearly 19,000 bales direct and 4000 via London. The whole number of sheep in the colonies is nearly 96,500,000, of which about one-half are in New South Wales.

The New York and New England Railroad depot in Boston, to be finished in December, will cost $500,000 and upward.

Gedney Channel, in New York harbor, one of the most difficult to navigate, is to be lighted by six powerful electric lamps, supplied by a cable from Sandy Hook. Three of the lamps will show a red and three a white light, it being imperative that the starboard and port sides of the channel be distinctly seen, so that vessels may make their way through in safety. Gas-lit buoys have been tried, but they require constant attention. Ice is apt to tear them away, and besides they must be kept burning day and night, as there is no way to regulate the compressed gas within them

The chairman of the Interstate Commerce Commission, Judge Cooley, gives warning, in a letter to Chairman Blanchard of the Central Traffic Association, that there is a necessity for continuing their efforts in the direction of a uniform classification of freight. Such classification, he says, must be brought about before the lapse of any great length of time, and if not agreed upon by the managers themselves is certain to be compelled by law; and he points out the advantages of voluntary rather than compulsory conformity. In a letter to Chairman Midgeley, of the Southwestern Railway Freight Association, Judge Cooley says "that a uniform classification will be required by law before any great delay, I have no doubt. The proper authority to make it is that of the railroads themselves, and they ought to

act, in view of the necessity which will soon be upon them." For more than a year past a joint conference committee of Eastern and Western roads have been at work trying to bring about the adoption of a uniform classification, but so radically different were the views of the Eastern and Western members of the committee regarding the matter that they threw up the job in disgust a short time ago. It is hardly probable that another effort to bring about a unification of the Eastern and Western classifications will be made by the railroads, and nothing but Congressional legislation can enforce the much desired reform.

The action of the State Board of Equalization in placing an additional burden of taxation on New York City evokes earnest remonstrance. The Board, at its final session on Monday last, reported that out of a total of $200,927,687 added to the value of real estate, nearly $119,000,000 had been transferred from other counties, and this amount is additional to the total of $1,560,373,506, equalized real and personal, as assessed for 1887. Westchester County, likewise, has $17,739,948 added to the assessed value of real estate. Kings County, on the other hand, is favored with a reduction of $23,216,023. As stated by another: "These Dick Turpins of the Board of Spoliation plunder New York of the tax on $119,000,000, while they enable their own counties to dodge taxation on $79,000,000 which they ought to pay." The total value of assessed personal property in the State for 1887 is $346,611,861; total value real and personal property in the State 1887, $3,469,199,945; total equalized value real estate, $3,122,588,084; total equalized value real and personal 1877, $3,469,199,945.

A recent excursion of Admiral Luce in a steam yacht through the canals from New York to Norfolk is supposed to have some connection with a contemplated movement in favor of utilizing our inland lines of water communication for purposes of national defense as well as to promote the interests of commerce, and it is not unlikely that at the next session of Congress an effort will be made to insert a clause in the river and harbor appropriation bill authorizing the Secretary of War to have the canals between New York and Norfolk surveyed, with a view of determining the feasibility and cost of such an undertaking.

The Commissioners of Public Charities and Correction of New York City intend to spend $500,000 during the present fiscal year in renovating and otherwise improving the public buildings within their charge. The bulk of this increased appropriation will be spent in constructing new and improving old buildings and in increasing the amount of necessary supplies. On buildings will be spent $504,400, as compared with $17,500 for 1887. The plumbing system at the Tombs prison must be entirely renewed. A new morgue will cost $10,000, and about $6000 will be spent in properly furnishing the new training school for males. A new pavilion for the almshouse will cost $37,000. Many other improvements on the island institutions are contemplated.

At last the Northwestern railroads are in harmony. They have patched up their differences and agreed unanimously to advance freight rates to the basis of 60 cents first-class between Chicago and St. Paul. This action was the result of the meeting at Chairman Faithorn's office on Thursday last. The chief cause of all the discord for years past has been the milling-in-transit rates of the roads having lines west of St. Paul. These lines were enabled to monpolize the grain and flour traffic, and the roads terminating at St. Paul could not compete with them. The Burlington and Northern refused to agree to any advance in merchandise rates until these milling-in-transit rates were abolished, or so changed as to give the non-transit lines a share of the business at reasonable rates. The St. Paul road has held out against all propositions to compromise this difference, but has now agreed to a plan that was satisfactory all around. This plan is to throw open the transit business to all the non-transit roads, and make Chairman Faithorn arbitrator to decide from time to time the amount to be paid the non-transit lines for transporting this business out of Minneapolis. This removed the whole difficulty, and left the way clear for a general advance in other rates. It will be several weeks before the importance of the railroad settlement in the Northwest can be estimated. There seems to be an effort to accomplish something beneficial, but whether the advance in rates will be permanent only time can tell. A meeting of the Freight Committee of the Central Traffic Association ratified the agreement. The advanced rates will go into effect October 15, according to the original programme.

Mayor Hewitt's yellow fever fund amounts to $57,490.

Peru has ratified the treaty of "amity, commerce and navigation" between it and the United States.

The National Board of Steam Navigation of the United States will be held at the Fifth Avenue Hotel, this city, on October 24.

## Tractive Power of Locomotives.

Mr. M. N. Forney thus explains the meaning of the term tractive power of a locomotive. It is the force with which the locomotive is urged in a horizontal direction by the pressure of the steam in the cylinders, and which therefore tends to move the locomotive and draw the load attached to it. The tractive power is due to the pressure of steam on the pistons, and therefore its amount is dependent upon the average steam pressure in the cylinders on the area of the piston and also on the distance through which the pressure is exerted—or, in other words, on the stroke of the piston. Thus, if we have a cylinder 17 inches in diameter and 2 feet stroke, and an average steam pressure of 50 pounds per square inch, then, as the area of such a piston would be 227 square inches, the average pressure on it would be $227 \times 50 = 11,350$ pounds, and, as each piston moves through 4 feet during one revolution of the wheels, the number of foot-pounds of energy exerted by it would be $11,350 \times 4 = 45,400$, and for the two cylinders of a locomotive double that amount, or 90,800 foot-pounds. If the driving-wheels are 5 feet in diameter their circumference will be 15.7 feet, and therefore the locomotive will move that distance on the rails during one revolution, if the wheels do not slip. The 90,800 foot-pounds of energy is therefore exerted through a distance of 15.7 feet, and therefore

$$\frac{90,800}{15.7} = 5783 \text{ pounds},$$

which is the force exerted through each foot that the circumference of the wheel revolves and the locomotive moves. If the wheels were only half the diameter, or 2½ feet, then their circumference would be 7.85 feet and the tractive power would be

$$\frac{90,800}{7.85} = 11,566 \text{ pounds},$$

or double what it was before. It will be seen, then, that the tractive force of a locomotive is dependent upon, 1, the average steam pressure in the cylinders; 2, the area of the pistons; 3, the stroke of the pistons, and 4, the diameter of the driving-wheels. The tractive power of a locomotive is, therefore, found by multiplying together the area of the piston in square inches, the average steam pressure in pounds per square inch on the piston during the whole stroke and four times the length of the stroke of the piston, and dividing the product by the circumference of the wheels. The result will be the tractive power exerted in pounds. The adhesion must, of course, always exceed the tractive force, otherwise the wheels will slip.

## Gas-Holders Without Upper Guide-Framing.

In a paper recently presented to the British Gas Institute, Mr. W. H. Y. Webber endeavored to show that by a modification of the ordinary arrangement of bottom rollers, and by the addition of tangential rollers, the upper guide-framing, or the greater portion of it might be dispensed with. The paper described a recent invention of Mr. William Gadd, of Manchester, by the application of which a gas-holder may be guided from the bottom curb; the whole of the elevated framing being dispensed with, while at the same time the stress of wind or snow pressure upon the holder has the effect of producing greater rigidity in the structure. The weight of the guide-framing of gas-holders as usually designed and constructed, if composed of wrought iron standards, slightly exceeds that of the floating vessel, and if of cast iron columns, the weight of the framing is greater still. It follows, therefore, that the cost of the guide-framing of a holder amounts to about one-half the cost of the complete structure.

If the upper guide-framing of a gas-holder could be dispensed with altogether a saving of about 50 per cent. would be effected. Mr. Gadd's invention for dispensing with the elevated guide-framing consists in placing channel or other guides within the tank at an angle, like the thread of a screw, instead of in the vertical plane as has hitherto been the invariable practice. The guide-rollers attached to the bottom curb of the holder are ranged either radially or tangentially with the sides of the vessel, and as they work in the channel or rail-guides provided for them, a helical or screw-like motion is communicated to the floating vessel as it rises and descends in the tank. The guides attached to the tank sides may be placed at any angle from 45° upward. So long as the rollers are free to move within the guides, it is impossible that the holder can tilt so as to get out of the vertical; the tendency of wind or other pressure exerted against the sides or on the roof of the vessel being to produce what may be described—imperfectly, however—as a locking action, which will sustain the holder in the upright position, however great the strain, within the resisting strength of the rollers and their carriages. While this locking or gripping action gives rigidity to the vessel, enabling it to resist the overturning force, the rollers are perfectly free to rise and descend within the guides.

In the Supreme Court of Pennsylvania, sitting in Pittsburgh on Monday, Justice Green handed down an opinion dismissing the appeal of Jacob Reese, of Pittsburgh, in the suit of the Bessemer Steel Company. The action was brought by the Bessemer Steel Company to compel Reese to transfer certain patents involving the basic process in the manufacture of steel. The lower court decreed that Mr. Reese must assign all the patents to the Bessemer Company, for which the latter was to pay Reese the sum of $32,000. This opinion is sustained.

# MANUFACTURING.

### Iron and Steel.

Lucinda furnace, of the Lucinda Furnace Company, Norristown, Pa., will blow in this week on Bessemer pig.

An order has been received by the Riverside Iron Works, at Wheeling, for 15,000 feet of steel pipe for a New York concern. This pipe is to be treated by the Bower-Barff process at Pittsburgh.

The Moorhead-McCleane Company, Soho, Pittsburgh, have recently completed a new galvanizing shop in which they expect to do general job work, devoting particular attention to galvanizing iron pipe.

At the time of the construction of the Etna Iron Works plant, at Ironton, Ohio, it was designed to build twin stacks—the Alice and Sarah. The Alice was completed and has now been worked for some 14 years, its last blast lasting four years and three months—a remarkably long run considering the kinds of ore that have been used. The Blanche furnace was never lined before, but is now almost completed, and will be blown in about the third or fourth week in October, and is expected to have a monthly capacity of 3750 tons. The lining has been made by the Scioto Fire Brick Company, of Sciotoville, Ohio, and Mr. James Wileman has had charge of the masonry work. The Portsmouth Foundry and Machine Works are doing the boiler and machinery work. The new furnace will be the exact duplicate of the Alice furnace, with the exception that some slight alterations have been made in the interior proportions, which it is expected will have a very favorable effect upon its workings.

R. C. Johnstone & Co., Dalton, Ga., have received a proposition from a Connecticut malleable iron works to locate in Dalton upon certain conditions.

The Roanoke Land and Improvement Company have agreed to give a site to the Philadelphia Bridge Company, of Philadelphia, for the location of iron bridge works at Roanoke, Va.

Recently No. 2 Bessemer mill, of the Pennsylvania Steel Company, at Steelton, Pa., made an extraordinary run in its average of over 1000 tons of steel ingots each day.

The Bellaire Nail Works, at Bellaire, Ohio, are erecting a stockhouse 150 x 300 feet, to cover their entire furnace yard and switches, so that their full stock of ore and coke can be kept housed.

The Kansas City *Times* says: "The Harrison Rolling Mill have concluded their negotiations for a site, and will begin erecting their buildings in the east bottoms within 30 days. The iron mills owned by the Heims, and now located at East St. Louis, will be moved here shortly."

A furnace is to be built by J. W. Burke and others at Jacksonville, 12 miles from Anniston, Ala.

The Springfield (Ohio) *Union* says: "The test steel plant erected by the James Leffel Company for the purpose of thoroughly testing the process purchased by Mr. Bookwalter, in France, of making steel from a low grade iron, is about ready to start."

From a Pottstown paper of recent date we take the following item: "The nail plate mill of the Pottstown Iron Company is not running this week on account of repairs being made. The gas pipes, heretofore overhead, will be taken down and the gas conducted through sewers constructed of brick underground. In consequence of the mill being idle the nail factory closed last evening for the balance of the week. The Glasgow Iron Company's Steel Works, which have been running single turn only, will commence on double turn on Monday, October 1. This will add about 100 more men to their works. The puddle mill connected with the nail plate mill of the Pottstown Iron Company will stop to give the men an opportunity to attend the fair. Some of the other mills of the company will also stop for the same purpose. The bridge works will also be closed for the same purpose, also the nail factory of Ellis & Lessig."

Mr. J. J. Morehouse, of the Chatham (N. Y.) Furnace Company, reports that the hematite charcoal furnace was blown in on the 10th ult., after having undergone extensive repairs. At the mines, also, considerable improvements have been made—a new washer having been put in, &c. The result is that the furnace is now making a larger output of car-wheel iron than ever before.

It is reported that the Pioneer Mining and Mfg. Company, of which Sam Thomas, of Pennsylvania, is president, will build a new furnace and rolling mill at Thomas, four miles from Birmingham, Ala. The total cost will be $500,000. The furnace will have a capacity of 100 tons of pig iron per day, and the rolling mill 150 tons of merchantable iron daily, and will give employment to over 1000 men.

Since the Thomas Iron Company, at Hokendauqua, Pa., bought their hematite ore by the unit the average percentage in metallic iron has increased from about 36 per cent. to an average of 42 per cent. This, of course, has increased the output, at the same time leading to a saving in fuel and in flux.

Top Mill Furnace, Wheeling (W. Va.) Iron and Nail Company, will probably blow in on or about the 15th of October.

Charlotte Furnace, Charlotte Iron Works, Rochester, N. Y., is being prepared for a renewal of operations, which it is expected will take place before the close of the current month.

Mount Laurel Furnace, Clymer Iron Company, Temple, Pa., is having a new bosh and lining put in. It is expected that it will be ready to blow between the 15th and 20th of this month.

Florence Furnace, Henderson Iron Company, Sharpsville, Pa., which blew out on the 19th ult., is undergoing repairs, which will probably be completed by the 1st of November.

### Machinery.

The Delaware and Hudson Canal Company have commenced the erection of new shops and a large roundhouse at Whitehall, N. Y.

The Whittier Machine Company, of Boston, Mass., have recently constructed for the West End Street Railway Company, Roxbury, Mass., a freight elevator for their stables.

Wm. B. Pollock & Co., proprietors of the Mahoning Boiler Works, Youngstown, Ohio, write us under recent date that they have been very busy for the past year and have considerable work ahead of them. They manufacture boilers, build blast furnaces and execute sheet-iron work of all kinds.

The Belden Machine Company, of New Haven, Conn., write us under recent date that they represent to a certain extent a continuation of the Danbury firm formerly known as the R. A. Belden Company, which is now extinct. The new company have purchased a large factory in New Haven, formerly occupied by the Mansfield Elastic Frog Company, and have filled it with improved machinery. They will continue to manufacture the Belden improved power hammer and the Belden crank planer, and also a full line of drop forgings made from special patterns. They use drop hammers of their own build. They make and repair machinery, and in a general way turn out anything in the drop forging or special machinery line that may be wanted.

B. W. Payne & Sons, of Elmira, N. Y., have just sent us a new catalogue, which is devoted wholly to their high speed Corliss engine. This engine, as some of our readers may perhaps remember, is noteworthy for the fact that it combines a Corliss valve gear with a shaft governor and runs at a speed which is remarkably high, compared with the customary speed of ordinary forms of Corliss engines. The engine is illustrated in detail, and the engravings will no doubt be examined with a good deal of interest by engineers.

The Norton Emery Wheel Company, of Worcester, Mass., have just issued a new catalogue and price list of emery-wheels and emery-wheel machinery generally. It is profusely illustrated, showing a large number of different types of grinders, and gives all the information which prospective users of such tools may require.

The Columbus Machine Company, Columbus, Ohio, have issued a new catalogue and price list of their various manufactures. It contains illustrations and descriptions of their blowing and rolling mill engines, and stationary engines of various designs, boilers and boiler fittings, shearing machines, &c. Pulleys and gearing are also treated of, while the concluding portion of the catalogue is given up to illustrations of architectural ironwork of various kinds.

Messrs. W. D. Allen & Co., 151 Lake street will hereafter have control of the Chicago branch of the New York Belting and Packing Company. Messrs. Allen have for a number of years done an extensive business in leather belting for the account of Fayerweather & Ladew.

A brief outline of the Ball system of arc lighting is given in a small, eight-page catalogue just issued by the Ball Electric Light Company, 18 Cortlandt street, New York

The Reliance Gauge Company, of Cleveland, Ohio, have received through the Reading Iron Works, of Philadelphia, another order from the Pencoyd Iron Works, of Pencoyd, Pa., a suburb of Philadelphia, for eight of their safety water columns. This is the fourth order from the Pencoyd Iron Works.

A Buckeye automatic engine of 125 horse-power is driving three of the Western Edison Electric Light Company's dynamos at the Chicago Exposition, furnishing power for 104 arc lamps A similar number of lamps are run by a Russell engine, made at Massillon, Ohio

The Schuyler Electric Company, of Middletown, Conn., makers of dynamo machines, arc and incandescent lamps and all articles relating to electric lighting and the distribution of electric power, have issued a catalogue describing their system at some length. Engravings are given of the Schuyler dynamo, together with enlarged views of their new safety armature, their automatic regulator, and single and duplex arc lamps, incandescent lamps, &c. Brief chapters are devoted to plans of lighting cities and towns, the cost of electric lighting, the power required and other matters.

Messrs. Pedrick & Ayer, 1025 Hamilton street, Philadelphia, have issued a small pamphlet devoted to the interests of their heavy universal milling machine. The

machine is briefly described, and a very flattering report on it, made by the Committee on Science and the Arts of the Franklin Institute is appended.

The Jewell Belting Company, of Hartford, Conn., have just completed a belt 5 feet wide and 140 feet long, of two thicknesses of leather. It weighs over 1600 pounds.

The contract for steam boilers for Spreckels' sugar refinery, at Philadelphia, has been given to the Babcock & Wilcox Company, of New York. There will be 7500 horse-power of boilers furnished at a cost of $139,800.

The Fitchburg Machine Works, of Fitchburg, Mass., are sending out a neat little catalogue devoted to their line of metal working machinery. It gives illustrations and brief descriptions of their different tools, and will, no doubt, be examined with interest by machinery users.

The addition to the machine shops of the Portage Lake Foundry and Machine Works, of Messrs. Stephen E. Cleaves & Son, Houghton, Mich., which was begun in June, is now completed except the erection of the machinery. Its dimensions are 40 x 40 feet, while those of the shop as it stood before are 40 x 80 feet, making the completed building 40 x 120 feet. The principal piece in the machinery equipment of the addition is to be a lathe weighing 28 tons, the largest in the Upper Peninsula outside of the machine shop of the Calumet and Hecla Mining Company. It is being made by the Niles Tool Company, of Hamilton, Ohio, and will arrive in a short time. A stone foundation for a new foundry building, 65 x 150 feet in size, has recently been laid around the foundry building now used.

Catalogue No. 15, issued by the Dean Brothers Steam Pump Works, of Indianapolis, Ind., has just come to hand. It is a very creditable specimen of trade literature from a typographical point of view, and, besides, is not lacking in value as a source of information on the company's manufactures. Their different makes of pumps are illustrated in elevation and section, and engravings are also given of their combined pumps and boilers, together with detailed tables of sizes and prices.

Messrs. A. J. Sweeney & Son, of Wheeling, West Va., write us as follows, under date of September 25: "In our boiler yard we do very little outside of first-class marine work, upholding a much higher standard of workmanship than generally obtains in repair shops. In dull times we take in some outside repair jobs, but only to keep together our boiler yard gang. In consideration of the higher skill of our workmen we have paid an average of from 50 cents to 75 cents per day more money than others here. The object of the strike seemed to be to induce Messrs. Cox & Morrison to increase the [illegible] of their men. The boiler-makers presented a schedule, the items of which we were complying with, with the possible exception of a claim for $1 extra per day—that is, their wages should be increased $1 per day when they were working on what is known as repair work—namely, boilers and the like, which is very dirty and arduous kind of labor. When the committee called on us it was headed by a man named John Ehman, who is publisher of a little sheet in this city, presumably devoted to the interest of workingmen, and calculated only to make the most trouble for all outside parties. So soon as we discovered the identity of Mr. Ehman we refused to at all consider the schedule of prices; our men were entirely satisfied, and one of them was on the committee who called on us. They did not desire to strike, and were perfectly satisfied with the way we were paying them, but were whipped into line by the fear of being called black sheep. We refused point blank to consider the question at all as long as any one beyond our own boiler yard was connected with it. Messrs. Cox & Morrison have concluded a settlement with their men, and compromising on a scale to be paid for repair work in proportion to the value of the men employed. Our men are still out, with the exception of one who refused to remain with them, and so long as they continue to countenance such cattle as this man Ehman they will still be out, so far as we are concerned."

A new catalogue, dated 1888–89, has just been issued by Messrs. Edward P. Allis & Co., of the Reliance Works, at Milwaukee, Wis. The catalogue is specially devoted to mill and engine supplies, and will be found to contain a large amount of desirable information bearing on these branches. It is profusely illustrated, and contains extensive price lists.

The Baltimore and Ohio Railroad Company are fitting up 20 cars with the Johnson electric heat regulating device, and will equip 95 cars at once. Last fall a single car on this road was thus equipped and has given entire satisfaction ever since. The result was this order, which, we understand, is to be followed by others. Several other roads are also testing this device.

The Clayton Air Compressor Works, of Brooklyn, with a New York office at 43 Dey street, have sent us an advance copy of their catalogue No. 6. It fully illustrates and describes in detail the different styles of the Clayton air compressors, duplex and single, worked either by steam directly or by belting or gearing. In addition it gives much information and data of interest to users of compressed air, and descriptive tables and price lists of rock drills, hoisting engines, mining and boiler feed pumps, pneumatic locomotives, &c.

The Wheeler & Wilson Mfg. Company, of Bridgeport, Conn., started their works again last week. Important changes have been made, including the reduction of employees from 1100 to 800, the running now on eight hours' time, the abandonment of the former contract system, so that most of the work is now done without the intervention of contractors, and considerable reduction in the price of the few contracts that are continued. A stockholder said recently that the company used to pay 100 per cent. annual dividends, but for the past five years had not averaged over 2 per cent. There had been one time in the past when the stock was worth $5 for $1. He did not think it would pay over 5 per cent. in the future.

### Miscellaneous.

The Holyoke Hydrant and Iron Works, of Holyoke, Mass., are sending out a small catalogue illustrating and briefly describing an improved form of fire hydrant built by them.

The Baldwin Locomotive Works are exceedingly busy completing orders on hand. The last consignment of the order for 60 locomotives for the Reading Company has just been made. The Pennsylvania Railroad have contracted for 50 eight-driver freight locomotives, and 20 have been delivered. A shipment of 10 narrow-gauge locomotives to the Mexican National Railway made last week filled 30 cars. Altogether the company turned out 70 locomotives during September, and it is expected that the record for the year will be 730 locomotives, or more than two daily.

T. William Harris, of the firm of T. William Harris & Co., 44 Broadway, New York, was elected, September 22, secretary of the Pomeroy, Middleport and Syracuse Street Railway Company. This road will extend from Middleport to Syracuse, Ohio, a distance of over ten miles, and will be built in a most thorough manner for its large freight and passenger business.

The William Cramp & Sons Ship and Engine Building Company, of Philadelphia, on Saturday launched William P. Clyde & Co.'s new steel steamer Iroquois. The Iroquois is 300 feet long, 46 feet beam and 29 feet deep, with a measurement of about 3000 tons. She is the first large steel steamship built in this country for the merchant service, and is fitted with steam steering gear and lighted by electricity. She is to have triple-expansion engines, and to be fitted up with first-class accommodations for 200 passengers. She is to be used in the coastwise service from New York, beginning about November 1.

The Atlantic Cotton Mills, of Lawrence, Mass., are obliged to use a few electric lights each day, and purchased a year ago a 45-arc light plant (Waterhouse system), and have turned on and off lights at will, the Waterhouse regulator giving satisfaction and maintaining a steady current under partial or full load. The plant has been increased 77 lights, the order being given to the Waterhouse Electric and Mfg. Company of Hartford, Conn.

### Prime Movers.

Sir Frederick Bramwell, in his recent presidential address before the British Association for the Advancement of Science, remarked:

There are prime movers and prime movers—those of small dimensions, and employed for purposes where animal power or human power might be substituted, and those which attain ends that by no conceivable possibility could be attained at all by the exertion of muscular power. Compare a galley, a vessel propelled by oars, with the modern Atlantic liner; and first let us assume that prime movers are non-existent and that this vessel is to be propelled galley fashion. Take her length as some 600 feet, and assume that place be found for as many as 400 oars on each side, each oar worked by three men, or 2400 men, and allow that six men under these conditions could develop work equal to 1 horse-power, we should have 400 horse-power. Double the number of men, and we should have 800 horse-power, with 4800 men at work, and at least the same number in reserve, if the journey is to be carried on continuously. Contrast the puny result thus obtained with the 19,500 horse-power given forth by a large prime mover of the present day, such a power requiring, on the above mode of calculation, 117,000 men at work and 117,000 in reserve, and these to be carried in a vessel less than 600 feet in length. Even if it were possible to carry this number of men in such a vessel, by no conceivable means could their power be utilized so as to impart to it a speed of 20 knots an hour. This illustrates how a prime mover may not only be a mere substitute for muscular work, but may afford the means of attaining an end that could not by any possibility be attained by muscular exertion, no matter what money was expended or what galley-slave suffering was inflicted. Take again the case of a railway locomotive. From 400 to 600 horse-power developed in an implement which, even including its tender, does not occupy an area of more than 50 square yards, and that draws us at 60 miles an hour. Here again the prime mover succeeds in doing that which no expenditure of money or of life could enable us to obtain from muscular effort.

# The Iron Age

New York, Thursday, October 4, 1888.

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RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - - BUSINESS MANAGER.


## Profits on Silver Coinage and the Surplus.

There seems to be a good deal of uncertainty as to the amount of the surplus in the United States Treasury. Some say there is practically none at all. Some say there is more than $100,000,000. Some say there would be none if the imperatively necessary expenditures for National objects and for the payment of the actual obligations of the Government were provided for. Some say that if there is a surplus, it should be spent in buying bonds of the Government not yet due. And, of course, there are many schemes good, bad and indifferent, for disposing of the surplus, if there be one.

Strangely enough, no one seems to realize where a part of the surplus has actually come from. It is apparently accepted by all parties that this money has been taken "from the pockets of the people" through the medium of an excessive collection of revenue. Why has not some keen economist recognized the fact that $40,000,000 nominally in the Treasury has never been in the pockets of the people at all, but is simply the profits of the Government, derived from the simple process of buying silver bullion at the market rate, and coining it into dollars at the rate of $1.29 per ounce? The last report of the Director of the Mint shows that the "seignorage" on silver coinage during the fiscal year ending June 30, 1887, was nearly $8,000,000, and that the total net profits of this business during the nine years of its continuance, after deducting cost of coinage, losses of metal, and money paid by the Government in shipping silver dollars free to all parts of the country, in order to facilitate their circulation, amount to $38,601,277. Estimating the results of the three months which have since elapsed, it is safe to say that these "profits" now amount to $40,000,000. We are therefore justified in saying:

1. If the United States had made the same purchases of bullion, at the same prices, as has been actually the case, but had coined dollars of full value, so as to make no "fiat" profit on the business, the silver producers would not have been affected; there would have been no difference in the course of trade, but there would now be a surplus of only $80,000,000, instead of the $120,000,000, which the Treasury officials claim it to be.

2. If the United States had coined the same number of dollars as it has done, but had made them of full value, the silver producers would have had the benefit of $40,000,000 additional purchases of bullion; the price of silver would have been to that extent supported and there would now be so much less surplus.

3. If the United States should desire to enter into an international agreement for the remonetization of silver throughout the civilized world, it would be obliged, as clearly appears from the report of Mr. Edward Atkinson on that subject, to recall and recoin its silver-dollar coinage. This would involve two losses: first, the loss of the fictitious value attached to the coins over and above what the metal actually cost the Government; secondly, the loss due to the continued fall in the market price of silver. The two, together with the expense of recoinage, would cost the Government nearer $100,000,000 than $40,000,000, and practically the surplus would disappear.

In other words, to the extent of $40,000,000, the so-called surplus is no more real than if the Government had printed paper notes to that amount and piled them in the vaults. These $40,000,000 never were "in the pockets of the people." They never were anywhere. They represent nothing but an illusion, and they might well be dissipated (spent is hardly the proper word) in putting more silver into the silver dollar. At present it is a the boast of counterfeiters that they make as good an article as the Government—equal in fineness and weight—and the profits, at the ruling price of silver, are from 25 to 30 per cent. Let the United States go out of competition with counterfeiters, and their "surplus," as well as its "surplus" (*arcades ambo*), will disappear.

## Position of the French Copper Syndicate.

It is a somewhat difficult matter to understand what Congress can possibly do to embarrass the operations of the French copper syndicate or aid manufacturers and consumers to shake off the grasp it now has upon them. A reduction in the present duty on copper and ores of copper, or its entire suspension, would have practically no effect, except in one contingency, which is remote. They might mark up prices in this country, having control of its output, above the prices elsewhere in the world, to the extent of the duty, even if there were sellers in other parts of the globe willing and eager to supply a part of our demand. Exporting our surplus they might use it to whip into line recalcitrant producers elsewhere, and make the consumers in the United States pay the piper. That, so far as we can see, is the only contingency in which the fact that copper was duty free might prove troublesome to the manipulators of the markets.

So far as the American mining companies are concerned their position seems to us to have only one possibly weak point. They can claim justly that they have the right to decide to whom they will sell, at what prices and for how long a time. It is a private business affair, with which no legislature, State or national, has any concern. They have made their sales individually, without any concerted action on their part, and the terms are by no means identical, although they are similar. So far they are invulnerable. But if they have, individually or collectively, made any compact embracing as one of its features an agreement to limit production, their action may be construed to constitute a restraint of trade. So far as we know, that is not an offense which is, or can now be, punished under national laws, but there is a distinct and strong current in public opinion which favors their enactment and rigid enforcement.

As a matter of fact, the syndicate has placed the limits of its purchases high. So far as is known, they have agreed to take for three years the full product of the mines in any recent year, and, in some cases, have made allowance for a liberal annual increase. Thus, in the case of the Tamarack Company, which produced in the fiscal year ending June 30, 1888, a little over 10,000,000 pounds of ingot, the sale provides for 14,000,000 pounds in the first year, 17,000,000 pounds in the second and 19,000,000 pounds in the third year. The Boston and Montana, which lately reached its greatest output thus far, of 2,225,000 pounds in one month, may deliver 100,000,000 pounds in three years. A similar case is presented, so far as the Parrot, of Butte, Montana, is concerned. It is the knowledge of this fact which has aided in forming the conviction among the majority of manufacturers and consumers that the steadily increased burdens must ultimately break the back of the speculators.

There is little hope for manufacturers and consumers from the agitation now going on. They can only look to natural causes to free them from the incubus under which they are now suffering. We know how keenly they feel it, and since the publication in *The Iron Age* of September 20th of letters from electrical companies, we have had additional communications, showing even more emphatically that important work has been checked by high prices. While there are some who are sanguine enough to believe in an early collapse, we are convinced that a realization of the power of the syndicate has been spreading among manufacturers. It is true that the statistics abroad look black, but they naturally exaggerate in one direction. They deal with the "visible supply" only. They show that a very large part of the metal produced during the past ten months has not gone into consumption. But they fail to indicate, what everybody connected with the manufacturing industries knows, that the whole world has been swept clear of its supplies of old material and scrap, that the stocks of raw material and of partly manufactured goods and of finished articles have been reduced to a minimum. Through the entire period the syndicate has retained its power, and it may well be said that for the present the first most critical period has been passed. The principal sources of supply are under control. In fact, the accumulation of heavy stocks in the hands of the syndicate gives it a means of coercing those who were until now the chief beneficiaries of its operations. So far as the attitude of consumers on the one hand and of the ability of the syndicate to take care of accumulations of metal are concerned, the situation seems pretty well defined, and there is little doubt that thus far the speculators have come out the victors.

It will remain for them to take care of the constant increase in the production of copper from outsiders. At first, the skepticism of every one connected with the copper industry had a powerful influence in deterring others from opening old mines or starting new work. There are probably few who have the reputation of being authorities in the copper trade who

were not asked for their opinion late last year and early this year on the outlook, and who did not hesitate to warn their friends Later, the collapse in the tin speculation seemed to confirm the views of those who were conservative. It was difficult to find capitalists ready to advance funds to unwater old mines, put old plants into condition for use, or to buy supplies, fuel or new machinery. Since it is known that great financial powers are back of the speculation, since their ability to handle great contracts and to hold enormous stocks are well known, the situation is changed. The promoter has easy work, since no more profitable field can well be found. Nearly every mine, however miserable its past career, now has its enthusiastic friends, and can get money. This country is being scoured by independent prospectors and by the employees of men who are coining money in their present copper investments. Every one reasons that, if the French syndicate can take care of the product of the great mines of the world, it will assume additional burdens from newcomers who demonstrated their ability to be troublesome.

But all this takes time, and this year certainly will pass before much metal can come from new sources. Even later the development of outside production must be slow, and it would seem, therefore, that after having withstood the strain due to the opposition of consumers, manufacturers and the trade, the syndicate will for a time be in a relatively strong position. It has entered this period, which may be prolonged till next spring unless some unforeseen financial disturbances or complications in negotiations with such a producer as the Anaconda mine, of Butte, forces or induces them to change its attitude. For the present there seems little hope of relief.

## Interfering with Fuel Oil at Chicago.

The question of cheap fuel for Chicago manufacturers has by no means been entirely settled with the successful operation of the Lima oil pipe line. Fuel oil can now be had in abundance, it is true, and every day sees its more perfect adaptation to all sorts of purposes for which fuel is used, but the insurance companies have stepped in, and, by raising rates on buildings in which fuel oil is burned, have interfered with its general introduction. These companies have convinced the Mayor, the Commissioner of Public Works and the Chief of the Fire Department that the use of fuel oil is dangerous and have received assurances that permits will not be issued for it indiscriminately. The Board of Underwriters then adopted a rule that no risk on property should be taken where fuel oil was used, unless the owner had a permit from the Commissioner of Public Works and the building had been inspected by the superintendent of survey of the Board of Underwriters, and, even then, only at an advance of 1 per cent. on the regular rates. A provision in the rule adopted states that an agent may write a policy, under all proper restrictions, when the fuel oil used is 300 per cent. proof, but oil of that kind is not used for fuel. An ordinance has also been introduced into the City Council to regulate the distribution of fuel oil within the city limits, but, pipe lines not being contemplated within the city as yet, such legislation is only anticipatory.

This shows that the use of fuel oil in the West will not be very general among manufacturers until the fears of the underwriters are allayed. They have some reason for their hostility to this fuel, as shown by recent disastrous fires in various parts of the country, originating, as they allege, from its use. It is their duty to protect the interests of their companies and to reduce fire risks as much as possible, just as well as manufacturers feel impelled to introduce economies in their various lines of business to secure greater efficiency or increased profits. They cannot be censured for such action, as every manufacturer is to some extent interested in maintaining solvent insurance companies. Should his factory burn he wants the insurance for which he has paid. Underwriters who take risks of any degree of hazard are as much to be avoided as reckless men in any other line of business. But the increased rate which they impose in Chicago for permitting the use of fuel oil will, if enforced, prevent its use, because the enhanced cost of insurance may more than offset the saving as compared with coal. This has been the case at the Leland Hotel, in which oil was used with perfect satisfaction to the proprietor and all concerned, but it had to be abandoned when the rate of insurance was raised 1 per cent.

Insurance companies, like other human institutions, are managed by men who are liable to be erroneously informed or who arrive at conclusions upon insufficient data. It is asserted by the Chicago manufacturers that they have erected storage tanks free of the possibility of explosion, locating them away from all buildings and inclosing them with brick walls, taking every precaution against danger of fire, yet the underwriters have advanced their rates, notwithstanding the belief expressed by experts that such risks were not extra hazardous. To guard against the charge that the insurance companies are seeking to secure an extra profit from their customers under color of the danger attending the use of fuel oil, the underwriters should discriminate intelligently between the person taking necessary precautions and the one using no safeguards whatever. This is the course which should be pursued and which will ultimately have to be adopted. Insurance companies cannot stand in the way of progress. It would be better for them to promote it. They can do this by the very act of exercising discrimination. The varying rates of insurance according to the method of using fuel oil would compel the introduction of the safest and most efficient appliances.

Too much has thus far been accomplished in the vicinity of Chicago in the successful use of fuel oil to let the action of the underwriters interfere very seriously. Both within the city limits and outside of them are large establishments of various kinds whose managers would be very loth to return to the use of coal after having overcome the difficulties attending the introduction of fuel oil. The Union Steel Company have used oil since the 21st of last March for making steam, and hope soon to perfect arrangements for heating steel ingots and blooms with it. Experiments are in progress at the Joliet Steel Works, and the North Chicago Rolling Mill Company will also probably soon introduce it, pumping their supply from the Standard Oil Company's storage tanks through an independent pipe line to the South Chicago plant. Numerous manufacturing establishments in other lines are using fuel oil and speak well of it. Its use has almost revolutionized brick-making, all the large kilns near Chicago being now burned by oil, with great economy in time, labor and fuel. The absence of smoke is another important result of the use of oil, which makes it a desirable fuel in competition with soft coal. This is a nuisance which Chicago earnestly desires to abate, and the insurance companies should help the citizens in their efforts to get rid of it rather than stand in their way.

## The Course of the Lead Market.

The course of lead prices has seldom been so erratic as it has been so far this year. The range in the New York market for common domestic was as follows:

*Fluctuations in Prices of Lead*, 1888.

| | | | |
|---|---|---|---|
| January | 4.95¢ to 4.90¢ | June | 3.92½¢ to 4.10¢ |
| February | 4.90¢ to 5.15¢ | July | 3.80 ¢ to 3.85¢ |
| March | 5.15¢ to 5.15¢ | Aug. | 3.85 ¢ to 4.80¢ |
| April | 5.15¢ to 4.60¢ | Sept. | 4.95 ¢ to 5.05¢ |
| May | 4.60¢ to 4.05¢ | | |

Since the beginning of the year the speculative holdings in this city, either in the hands of the chief operator alone and his followers, have been large, most of the time 15,000 tons and more. The parties interested were in hopes that the spring demand would be active enough to enable them to realize advantageously the accumulation then held, bought at all sorts of prices, but in this they were disappointed. The spring trade proved very limited so far as lead manufactures were concerned, the consumption falling 30 per cent. short of the average. The consequence was that pig lead dropped in midsummer to very low figures, all the way to 3.80 cents in the New York market. Several from among the chief consumers in this vicinity availed themselves of this welcome opportunity and laid in a supply which they would otherwise not have bought before September or October. The speculative holdings were thus somewhat reduced, but, with the approach of the fall months, the main operator again increased his interest, and at the same time more active dealings were inaugurated at the Metal Exchange. A serious manipulation had now commenced to obtain control of all the lead available on this coast and dictate terms, if possible, to the consumers that might be compelled to re-enter the market in September and October. But here again there was a miscalculation; in September the trade in manufactures again failed to answer expectations, and during the entire month consumers only bought occasionally small amounts while waiting for a freer development in the demand for their goods. With fair weather and under the impulse of a generally good fall trade October may still bring it; but this is as yet doubtful. In this manner the interest in this great bull deal centers on the month we have now entered. October passed, with not much better results, and an early winter perhaps following, the owners of the present accumulation would find themselves in anything but an enviable position.

At the bottom of the general lead situation on this side there has been all along the reaction in real estate, the decrease of building, and the diminished consumption of lead manufactures, including white lead. But for this great drawback everything might have gone smoothly. It is now hoped that next year will prove very prosperous, in view of the comparatively fine crops we have, and the big prices likely to be realized for them all the way till the next harvest. Building, it is confidently hoped, will then flourish once more, and with it lead manufactures, including white lead, will sell freely at full figures. We trust all these expectations may be fully realized; still, it is a long way off, but this does not prevent the white lead manufacturers from making full preparations even now, nor from trying to concoct a sort of ironclad combination of the "trust" species. On the plea of a more expensive raw material, the price of white lead in oil has been advanced no less than ¾ cent. per pound, some 35 leading manufacturers all the way to Omaha having sided with this movement. So far, white-lead combinations have not proved successful, but with better experience they count on good results this time, and, following as they do in the wake of this current which gives birth to a fresh combination of the kind in some branch or other about every week.

In Europe lead has also improved a couple of pounds sterling per ton since summer, not because consumption has gained on production, but because there is now a better prospect that an international lead syndicate will be formed on a basis promising stability. How long such a combination will hold good seems to us doubtful, however, in the face of the large amounts of lead arriving in Europe from a new quarter, Australia. We hear that the proprietors of the Mechernich lead mines and works in Germany are jubilant over the prospect, as they will be particularly benefited, and that the Commern Union, which has lain idle for years, will resume operations. At any rate, taking everything into due consideration, it will be the part of wisdom not to be too sanguine. Production is large, both here and in Europe and Australia; the rise in silver stimulates it still more, while the better times for lead manufactures have yet to come. To put up prices so long in anticipation and thus check and frighten consumption before it freely manfests itself seems to us meanwhile the reverse of a sound policy.

It is interesting to note the degree of popularity which the American naphtha launch has already attained abroad. Thus, following closely in the wake of Messrs. Yarrow & Co., the British builders, to whose so-called "Zephyr" launches we referred in previous issues, comes a Swiss firm, Messrs. Escher, Wyss & Co., of Zürich, who, we are told, recently had under trial a similar boat, with successful results, the principles involved in both vessels being those of the launch first described by us about a year and a half ago and built in New York. It may not be amiss to point out here that, so far from being the result of independent investigation on the part of Mr. Yarrow, the Zephyr launch is built by him under a royalty to the American company, this fact having received no special mention, apparently for business reasons, the idea having been to allow the English public to fondly imagine the invention of the launch as of English origin. We know nothing definite of the later Swiss launch, but can safely take it for granted, we think, that its details present nothing strikingly new. The results in each case have shown naphtha vapor to be an economical and a generally satisfactory working fluid for an engine, though nothing further in the line of practical examination has been done since the recently noted tests carried out in England and the incomplete experiments conducted in this country several months ago. Promises of new trials, however, have been made, and the prosecution of these will, no doubt, bring forth additional noteworthy and interesting facts.

## Commercial Conquest.

The rivalries of commercial nations are bringing about strange transformations. Islands are tossed from one flag to another as dust is shifted in a balance, and through the arts known to diplomacy colonies are being planted here and there in comparatively unknown regions, with reference to an extension of trade rather than the mere acquisition of territory. Hence, it would appear that modern nations accept the fact, which monarchs of the olden time were so slow to comprehend, that "peace hath its victories as well as war"; that, indeed, there is a process of peaceful subjugation far more effective even in a mercenary point of view than is possible through the exercise of mere brute force. At this moment the leading powers of Europe, notably England and Germany, are engaged in schemes for the extension of trade on a scale that would seem to take the entire terrestrial ball within the scope of their ambition, but we seldom hear a hostile gun. Herein do we witness a vast stride in the development of a modern civilization as contrasted with the ensanguined march of armies in the past.

The enterprise which most challenges attention at the present moment is the opening of Central Africa, those almost impenetrable regions in which Livingstone, Stanley and sundry "relief" expeditions have acted as pioneers. Thus far we have heard of British West Africa and a British South Africa, but the exterior line of coast does not suffice as a field for commercial exploit so long as the vast fertile plateaus of the interior, with their swarthy millions of inhabitants, have not been reached.

Two years ago an Anglo-German agreement was formed for the amicable division of a territory in the jurisdiction of the Sultan of Zanzibar, on the Eastern coast, including a strip 150 miles long and 10 miles broad, exclusively for British occupation. This land, acquired originally by a trader named Mackinnon under a concession, has now been transferred to the "Imperial British East African Company," under a royal charter. It comprises the commodious port of Mombassa, capable of holding 20 ironclads, and forms the base of an irregular triangle, having its apex on the Eastern shore of the great inland sea, Victoria Nyanza, and is contiguous to the twin section of territory under German influence. This intermediate tract, with its lands of exhaustless fertility, its forests filled with valuable woods, is assumed to be the area of grand commercial possibilities. Among the ultimate designs clearly hinted at is the growth of wheat, cotton, tobacco and other products of the soil, which may eventually, like the East Indian possessions, serve as a source of supply for the United Kingdom, independent of all others. As described by a correspondent of the London *Times*:

The interior highlands are in many places peopled by a really fine race, shut out from the coast by Semitic influence. Millions of natives, living in fair and fertile, temperate, and even bracing regions, requiring supplies of clothing, have hitherto been compelled to use hides and skins for clothing for want of better material. This circumstance gives an indication of the vast prospective importance to British manufacturers of cotton goods of the opening up of that immense new market for their products, which promises to be not the least striking result of the development of the company's territories.

Two extensive plateaus have an elevation of some 2500 feet, capable of becoming a permanent settlement for colonists, a new center of trade, and a railway of 300 miles would bring what is believed to be a wheat country of great extent within less than a day's journey of Mombassa, the gateway from the ocean. The great labor problem which this scheme immediately presents is supposed to have its solution in British India, as not fewer than 7000 natives of India have already established themselves as traders and merchants in the Zanzibar dominions, and the Indian Government is favorably disposed to a wholesale emigration. It would appear, therefore, that a vast field, hitherto inaccessible, is freely offered to the commerce of the world, and that beyond, in the interior, like vast spaces in the stellar universe, there are new worlds to conquer. The trade of Uganda, of Unyoro, of Emin Pasha's provinces and the Upper Nile, and around the great lakes, we are told, is bound to be drawn to what will in time be its shortest and cheapest outlet to the coast.

What the Germans are attempting in Eastern Africa we are not privileged to know, but the probabilities of success are apparently as flattering as in the unfortunate island of Samoa, where the efficacy of guns and bayonets is under trial, with the entire population in arms to expel the invaders. And French conquests in Tonquin, if viewed from the commercial standpoint are far from flattering.

In our notice, a few weeks ago, of the steam trials of the Italian ironclad Lepanto, some prominence was given to the fact that a large number of locomotive boilers were used on board that vessel with very good results. Those who have followed the performance in the past of boilers of this type in sea service—in torpedo boats, for example, where they are at present used to the exclusion of all others, because of their compactness and capacity for high pressures, are well aware of the unenviable record which they have there established for themselves, giving out with alarming frequency from several causes, prominent among them the failure of the tube plates. The experience gained on board the Lepanto would therefore seem to be suggestive of something radically wrong in the ordinary practice of locomotive boiler design for shipboard use. Taking the boiler as a type, simply, it is

natural that the varied circumstances attending its employment have affected, with good or with little reason, some of the details of construction, and in these are easily found explanations for the erratic behavior of the boiler in different situations. Thus, in its legitimate sphere, railroad work, where the boiler could not well be successfully displaced by any other existing form, and where its performance has been all that can be desired under the circumstances, it has some features which are not always found in a locomotive boiler at sea. In the first place, the grate is placed well below the level of the tubes, and then again a fire-brick arch is built in the furnace, affording full protection to the tube sheet against cold-air currents and against the fierce heat of the fire. Examining any of the published designs of torpedo boat boilers we will find that in both these respects there is a marked difference. The brick arch has been left away entirely because of cramped room, and the grate is comparatively high, so that the alternating effects of an extremely high temperature and cold air blasts on opening the furnace doors bear directly and with destructive results on the tube ends and sheets. The Lepanto's locomotive boilers, we find it stated, were fitted as is usual in railroad practice, and, accordingly, as remarked in the report of the trials, they gave no trouble whatever, but furnished every evidence of good working from the beginning to the end of the whole series of tests. It is safe to say, therefore, that if only a true locomotive boiler were tried in all cases at sea it would give complete satisfaction. It should be borne in mind that the torpedo boat boiler upon which unfavorable conclusions have been so largely based cannot, strictly speaking, be called a locomotive boiler, lacking, as it does, some of its essential peculiarities.

## Magnetite Ores and Foundry Iron.

The *Journal of the Charcoal Iron Workers* has introduced a new feature in the form of answers to questions suggested by its editor. Among those printed in the issue just published we find the following reply by Edgar S. Cook, manager of the Warwick Iron Company, of Pottstown, to the question, "Why is it difficult to make good foundry pig iron from a burden of all magnetites?"

Good "foundry iron" may be considered a comparative term, for a brand unexcelled for some purposes may be almost worthless for others, and *vice versa*. Within recent years these distinctions are being made with some intelligence and judgment, but there is still room for improvement. Used in a general sense, good foundry iron may be considered soft, open grained pig irons, best adapted to the greatest variety of foundry work, and capable of carrying a large percentage of scrap. For special purposes, equally as good foundry iron can be made from all magnetites as from any other mixture of ores, but as a rule irons made from magnetic ores exclusively will not rank as high as those made from mixtures consisting largely of brown or red hematites.

The difficulty of producing a large percentage of foundry iron with magnetic ores was more marked with the small anthracite furnaces of former years than with the larger and better equipped plants of more modern construction. The use of a portion of coke has made the management also somewhat easier, and consequently enabled the percentage of foundry iron produced to be increased.

The difficulties attending the production of a large percentage of foundry iron from all magnetic ores are due to several causes. Mention will only be made of the leading ones. Within certain limits, the greater the ease with which the iron of an ore parts with its oxygen the more regularly and rapidly will the furnace perform its work of reduction and melting, and the hotter will be the crucible with the same weight of fuel. That the reduction of magnetic ores proceeds more slowly than of brown hematites or red oxides is probably due as much to their mechanical structure as to any difference in chemical composition. Most of magnetic ores available in the Schuylkill and Lehigh Valley districts of Pennsylvania are dense, close, compact ores. These ores, even when entirely free of sulphur, are more or less difficult to work, especially when filled into furnace in large pieces or masses, too heavy for one man to conveniently lift into a charging barrow. The writer has seen the dense New Jersey magnetics so filled into furnaces and at the same time the managers were complaining of the impossibility of making foundry grades, and the tendency of the furnace to work irregularly, or to run off on white iron, without (to them) any apparent cause.

The furnace gases experience more or less difficulty in penetrating, breaking up and de-oxidizing dense ores; they can be broken down more cheaply with hammers. Open, porous ores, or ores containing considerable combined water, are quickly and thoroughly permeated. In consequence, with magnetites there is a greater consumption of heat in the lower parts of the furnace, and, from the presence of ore only partially reduced, there is apt to be sudden variations in the temperature of the crucible. One of the conditions requisite to the production of a large proportion of the higher grades of foundry iron is almost absolute uniformity of temperature of the lower parts of the furnace. The crucible and boshes seem to acquire certain shapes or proportions by graphitic accumulations, without which uniform grades of No. 1 and No. 2 x iron can scarcely be made. Time is required to form these accumulations of graphite, &c., but they are quickly and easily disturbed, and the disturbing cause seriously affecting the product of foundry iron. The use of magnetic ores exclusively renders these disturbances more frequent and less subject to control, owing to the difficulty of thoroughly de-oxidizing them before reaching the crucible. With magnetites forming the burden the rapidity of travel of the stock in the furnace needs to be very carefully watched and the composition of the slag kept as uniform as possible. Any considerable variation in slag, or too rapid or too slow driving (variations that would pass unnoticed with easily reducible ores) are reasonably sure to produce marked changes in the furnace running on dense magnetites.

The objections to structure do not hold good so far as the soft earthy magnetic ores are concerned. These ores, on the other hand, usually carry considerable sulphur, an element which is well known as an unrelenting enemy of foundry irons. When present in the dense class of magnetic ores, it entirely unfits them for the economical production of foundry iron. When thoroughly washed, however, these form fairly good mixtures, as the washing not only removes the sulphur, but also opens the structure of the ores, rendering them porous and easily attacked by the blast furnace gases. Brown hematites and red oxides rarely carry sulphur to any considerable extent, which alone is a decided advantage in their favor in competition with magnetic ores.

Soft magnetic ores, free from sulphur, are fairly well adapted for making foundry grades; with these forming a large part of the burden no particular difficulty is experienced in making open-grained iron; this would indicate that the difference in chemical constitution between the magnesia and the red oxides is not responsible for the greater difficulty experienced in reducing magnetites.

The grain or fracture of foundry iron by which it is graded does not always indicate how it will work after remelting. The writer has seen large, dark grained and evenly crystallized iron condemned because it ran hard in small thin castings. The fracture of the iron was all that could be desired, and it also had the soft appearance that is familiar to the expert but difficult to describe. This iron proved hard in small castings, owing to the low percentage of silicon it contained (from 0.6 to 0.8 per cent.), and even when melted, without the addition of any scrap, would form a slight chill or hard shell on the surface of a casting in immediate contact with the mold. Experiments in the pig beds showed that this metal gave from $\frac{1}{16}$-inch to $\frac{1}{8}$-inch chill as tested in Whitney chill cups.

Foundry irons made exclusively of magnetic ores, whether they be close and dense of structure or of the soft, earthy varieties, are apt to show this tendency more or less; it is this want of uniformity that renders them undesirable for general foundry work, except as mixtures to strengthen the softer or weaker irons. While low silicon in the pig iron is undesirable for foundry grades, yet for mill irons this quality becomes valuable. Hence for the best brands of either grade the average consumer of foundry iron will consult his interest in purchasing his standard iron from furnaces making a specialty of this branch of the business, while the mill manager will avoid the forge grades made by the foundry furnaces and seek his supply of best iron from those blast furnaces making a specialty of mill or gray forge pig iron.

As a rule the gangue of magnetic ores contains but little free quartz or sand, the silicon is usually in combination with alumina, lime or magnesia, and the slag to this extent is partially made, so that the limestone flux added to the ore charge to produce slag of certain composition combines with the gangue of the ore more readily and at lower temperatures than when the gangue is chiefly quartz and sand. In consequence the iron made is less liable to contain reduced silica.

Other causes affect the percentage of silicon in the pig—but they pertain more to the management of the furnace itself than to the ores smelted. Large furnaces and super-heated blast permit of the production of high silicon foundry iron without particularly affecting the economy of the work. The low silicon foundry irons made from magnetic ores give varying results in the foundry, depending upon the knowledge of foremen of the melting departments; these irons, when also low in phosphorus, require more fuel to melt them and to run them as fluid as irons rich in silicon and phosphorus, but the difference in cost of fuel per pound of iron melted is but trifling. While this fact is known to many founders, others conduct their cupolas without regarding the different requirements of irons of various compositions, and as a result many imperfect castings are charged to the iron used when the fault really lies in the management of the cupola.

The grading of foundry iron is troublesome and annoying, as conditions altogether independent of chemical composition change the grain or fracture by which the pig iron is graded, bought or sold. Attention has lately been called to this subject, and I have only to add that frequent mistakes are made at the furnace by breaking and grading pig iron when too warm. Sample pigs are usually taken from about the middle of each bed of the cast. The

pigs should be cold—the temperature of the atmosphere. If only moderately warm the grain will show larger, darker and more even crystallization than when broken entirely cold. If a pig is broken warm and then broken again after losing all its heat the first fracture may show No. 1 grade, while the second, even within a few inches of the first, will be only No. 2, or silver gray. All irons do not alter to the same extent; possibly the higher the silicon and phosphorus the more difference there is in the appearance of the fractures of the same pig broken warm and then cold.

### Torpedo Boat Boilers and Engines.

In an interesting article on "Torpedo Boats," contributed to *Industries*, Mr. E. H. Parker says that in all recent constructions of the torpedo boat the locomotive type of boiler has been adopted in order to obtain the highest efficiency in the smallest possible space. As an example of the proportions of the modern boiler employed for this purpose, the particulars of No. 80 of the British Navy may be quoted. This vessel is the fastest in the navy, with an average speed of 23 knots, and her dimensions are 135 feet long by 14 feet wide. This boat is fitted with a locomotive boiler, having a single fire-box, a grate surface of about 46 square feet and a heating surface of about 2300 square feet. Steam is supplied to a set of engines indicating 1650 h.-p., with forced draft, which is equivalent to 40 i. h.-p. per square foot of grate surface. In ordinary merchant steamers only from 8 to 10 i. h.-p. per square foot of grate surface is obtained with natural draft and from 16 to 20 i. h.-p. with forced draft. The chief difficulty with the boilers of these boats has arisen from the high pressure of steam which is usually employed—viz., the rupture of the tubes at their junction with the tube plate. The danger incident upon such a breakage has been considerably diminished by an ingenious device invented by Mr. Yarrow, of London. According to this method the air forced from the fan is made to pass through light non-return valves, which are arranged so that if the flame or steam from any cause has a tendency to rush back, the valves immediately close and cut off communication between the boiler and stokehold.

Economy of fuel is a secondary consideration in torpedo boats. The average consumption at full speed varies from about 3¼ pounds to 4 pounds per i.h.-p. per hour. In boats built by Monsieur Augustin Normand, these figures have, however, been very much reduced. With a torpedo boat 124 feet long, a coal consumption of 2.45 pounds per i.h.-p. per hour was recorded. The above table gives the results obtained from long duration trials with six boats built by M. Normand & Co. At the close of last year Messrs. Doxford & Co., of Sunderland, England, completed a torpedo boat in which the furnace is supplied with liquid fuel. In the preliminary trials, the results obtained are said to have been of a satisfactory character. There is one advantage which liquid fuel possesses over coal—that is, with a given weight there is a greater endurance or radius of action. On the other hand, its application in war vessels would involve a serious risk, on account of the possibility of an explosive penetrating the oil tank.

The object which the engine builder has in view is to obtain the greatest propelling power with the least weight of engines, boiler and driving gear. In the earlier first-class boats, the power realized was from 35 to 36 i. h.-p. per ton weight of machinery. In recent boats of the same class, from 40 to 41 i. h.-p. per ton weight of machinery has been obtained. There are also torpedo boat chasers with engines of 3000 i. h.-p., and weighing only 112 tons, which is equivalent to 27 i. h.-p. per ton weight. In the Sharpshooter, which has been recently completed, the engines drive twin screws, and they develop 4500 i. h.-p. This power is deemed sufficient to attain a speed of 21 knots per hour. The total weight of the propelling machinery, including engines, boilers, water, &c., does not exceed 165 tons, which is equivalent to more than 27 i. h.-p. per ton weight. The small space occupied by the engines is worthy of notice. In the twin screw torpedo boat Ariete, built by Messrs. Thornycroft & Co., each engine develops 760 i. h.-p., and occupies a ground space of only 5 feet 9 inches by 6 feet. Recent first-class topedo boats carry not less than nine separate and independent steam engines—viz., (1) The main engines, (2) steering engine, (3) circulating pump engine, (4) engine for electric search light, (5) steam donkey, (6) engine for fan blower, (7) engine for patent condenser, (8) two sets of air-compressing engines.

### Fires from Steam Pipes.

The second annual report of the fire marshal of the City of Boston, for the year ending May 1, 1888, contains, among other matters, the following interesting information:

I have been able to satisfactorily trace the origin of but five fires during the year to steam-pipes, and the circumstances surrounding these in no way tend to show that wood, in its normal condition—*i. e.*, when free from any previous desiccation, is in danger of becoming ignited in this manner. In other words, ignition in said cases appears to be merely a certain species of what is popularly termed "spontaneous combustion," the steam-pipes themselves being merely one of many indirect factors which often assist in producing such combustion. Although the subject has been discussed pro and con from the year 1846, when Chief Braidwood, of the London Fire Brigade, first addressed the House of Lords on the topic, to the present time, when the opinions of experienced persons interested in the matter seem to be somewhat conflicting, I find by far the preponderance of evidence in favor of the conclusion that wood, subjected for a number of years to the heat of steam-pipes, may eventually reach such a state of carbonization as, with the addition of moisture, exposure to a draft of air, or under the influence of friction, caused by expansion and contraction of the pipes, may break into flame. As the ignition point of ordinary pine wood has been determined, by experiment, to be 700° F., it is evident that this must be reduced by some process, in order to admit of its taking fire at 292°, the temperature of steam under a pressure of 60 pounds.

I have found one of the most frequent causes of fires, which are indirectly traceable to steam-pipes, to be the self-ignition of dust, fluff, small pieces of paper, waste, &c., which seem especially attracted to the neighborhood of inclosed steam-pipes through almost imperceptible crevices. In several such instances the fires have been fortunately discovered and extinguished before doing any harm. P. A. Montgomery, secretary of the Western Manufacturers' Mutual Insurance Company, in special report No. 5 of the Manufacturers' Mutual Insurance Company refers to this same element of danger and suggests, as a remedy, the use of a funnel-shaped casting, cast in two parts, from 3 to 6 inches in hight, fitting close at the top, and screwed to the floor, where the pipe passes through; and he further recommends that a thimble of some non-combustible material should be put through the hole in the floor or partition and securely fastened on either side, in order to protect the wood from contact with the pipe.

The light sheathing by which the pipes are often covered, being obliged to constantly absorb the confined steam heat, is extremely liable to reach a dangerous ignition temperature. Sheathing reduced to such condition by being in close contact with the pipe, and so placed as to be susceptible to more or less friction caused one of the five fires herein referred to; another was caused by lumber dust in the dry-house of a planing mill sifting through the floor on to the pipes. The desirability of employing some sort of non-combustible covering for steam-pipes, to prevent their contact with wood, dust, &c., is apparent. They should never be inclosed in wood sheathing. Professor Gibson, in a report to the Manufacturers' Mutual Insurance Company, gives an exhaustive and instructive treatise on the merits of the various kinds of coverings.

Another danger from steam-pipes is the favor with which they are apparently looked upon as offering a desirable neighborhood for the location of rats' nests, in which the phosphorous matches and bits of waste often found therein are in danger of becoming impregnated with the necessary amount of heat essential to the production of spontaneous combustion.

B. P. Hutchinson, or "Old Hutch," as he is familiarly called, is supposed to rule in the Chicago Board of Trade. As promotor of the great wheat corner which culminated last week, after forcing the price up above $1.50 per bushel, in the effort to squeeze the "shorts," this bold speculator gained a wide notoriety. On Thursday he drew out of the clearing house a check of $675,000, as his profits on the sales of the day. As described by a correspondent, his favorite way of trading is to pass his card around the pit, with the remark, "Here, boys, put down what you want to buy or sell; I'll accommodate you." He will make trades, and realize on a fluctuation of a sixteenth of a cent. Some days when the humor seizes him he will hold the market within narrow limits and enjoy the discomfiture of the chronic bulls and bears, who vainly endeavor to get prices out of the rut. There are times, however, when the market gets beyond him, and his heaviest trades have no more than a temporary effect. During the late advance a sale of several million bushels stopped the upward movement temporarily, but that was all. More than once he has come to the rescue of the market and prevented it going to pieces. Then, again, as was the case a year ago last June, when the Harper wheat corner broke, he delighted in tantalizing those who had the good of the market at heart, and keeping them and the market on the ragged edge of anxiety. His transactions run up into the millions every week. He is equally at home in wheat, corn, oats or provisions, and no particular pit is favored. He runs them all. There are times, of course, when Armour steps in, but the old man is not even afraid of Armour, with his $50,000,000.

Messrs. Marchultz & Cantrell, National Iron Works, San Francisco, Cal., are engaged on plans for a new brick machine shop and foundry to be erected on the site of their old works.

The Ohio Valley Foundry, in Bellaire, Ohio, was burned on Sunday. Loss, $60,000; insurance, $29,000. The Bellaire Window Glass Works, adjoining, were damaged to the extent of $10,500. The fire was caused by a natural gas explosion.

# TRADE REPORT.

## Philadelphia.

Office of *The Iron Age*, 220 South Fourth St. } PHILADELPHIA, Pa., October 2, 1888. }

The past week has developed no new features, although it has confirmed the favorable anticipations expressed in recent reports from this office. A large amount of business has been arranged for, and in most cases at steadily advancing prices. The heaviest portion of the orders was taken at low figures, and a fair amount was also taken at advanced rates, but very little has been done so far at to-day's asking prices, although if it becomes absolutely necessary to place orders immediately sellers will doubtless gain their point. Appearances indicate, however, that the most urgent requirements have been satisfied, and both sides are in a position to wait for further developments. The chances are, therefore, that the volume of business will be comparatively light, as buyers see no object in placing orders at advanced prices until they are forced into it, and by the same rule sellers are not inclined to shade their prices until they have more Iron than can be delivered on back orders, which is not the case at present.

**Pig Iron.**—A somewhat irregular, but firm, market has been met with for some time past. As a rule prices are higher, but not in all cases. Limited quantities of good brands can still be had at $16, $17 and $18, at tide, for the three grades, while others of probably very similar quality command about 50¢ more, and those of a specially favorable character command still higher prices, say, $17 for Gray Forge, $18 for No. 2 Foundry and $19 @ $19.50 for No. 1. All depends on what the buyer requires, quantity, quality, delivery, terms of payment, &c. As a rule there is no doubt that the market is in much better condition than it has been for months past, and, from the lowest point, prices are easily $1 ℔ ton higher; in some cases more than that. The outlook is also very satisfactory and seems to promise activity and firmness all along the line. The general opinion is that prices are not likely to show much change until after the coming elections. Referring once more to the current quotations for Pig Iron, it may be said that for small lots $16.50 for Gray Forge, $17.50 @ $18 for No. 2 and $18.50 @ $19 for No. 1 are fair average prices. Large consumers bought heavily last month at less money, so that there is no demand, except for small lots, and no supply more than is being absorbed from week to week, either on old contracts or on new orders at advanced prices.

**Blooms.**—Good demand at quoted rates, which are about as follows: Nail Slabs, $29 @ $29.50, at mill; Billets from $32 to $36, according to analysis; Charcoal Blooms, $52 @ $54; Run-out Anthracite $42 @ $44; Scrap Blooms, $33 @ $35 ℔ "bloom" ton of 2464 lb. Foreign at tide, c.i.f., duty paid, $29.50 @ $30.50 for Nail Slabs; $34 @ $36 for 4 x 4 Billets, and $35 @ $39 for Siemens-Martin, price according to analysis, &c.

**Muck Bars.**—There is a good deal of inquiry, but the offerings are light, and at firm prices, say $28.50 @ $29 at mill, or $29 @ $29.50 delivered. Consumers do not take to these prices very willingly, but from present appearances they will have to do so, as sellers are in a strong position and show no inclination to make concessions.

**Bar Iron.**—This long depressed department of the Iron trade has wonderfully improved during the past couple of weeks. Large orders have been secured, and, as noted last week, prices advanced to 2¢ for lots from store, and in some cases mills are also quoting 1.95¢ @ 2¢ firm. But some of the mills would probably take $\frac{1}{10}$¢ less, so that 1.85¢ to 1.95¢ is nearer the actual selling price for large lots. Some orders for Car Iron (variously estimated at from 2500 to 4000 tons) were taken at figures not over 1.82½¢, in some cases less than 1.8¢, but new business for similar Iron, it is thought, could not be placed to-day at less than 1.85¢ @ 1.9¢, but it remains to be seen whether these figures can be realized in actual transactions. Besides orders from the car builders, Wrought-Iron Pipe manufacturers have been heavy buyers of Skelp Iron, so that the majority of mills have all the business they can handle for some time to come. Last sales of Grooved Skelp were at 1.9¢, and that would be an inside figure to-day, and from 2.05¢ to 2.15¢ for Sheared Skelp. Now that these orders have been placed, there may be a period of comparative dullness, but sellers appear to be in a strong position, and are not likely to shade prices to any extent until they need orders more than seems likely in the near future.

**Plate and Tank Iron.**—This branch of the trade does not keep pace with the one just commented upon. There is a fair demand, and mills are moderately well employed, but the majority would still like a few more good orders at quoted rates, and would perhaps shade a trifle to very desirable parties. The outlook is considered to be very encouraging, but as regards actual business, it is as yet more in anticipation than in definite orders on the books. Prices about as follows: Ordinary Plate and Tank Iron, 2.05¢ @ 2.15¢; Shell, 2.4¢ @ 2.5¢; Flange, 3.5¢; Fire-Box, 4¢; Steel Plates, Tank and Ship Plate, 2.3¢ @ 2.4¢; Shell, 2.7¢; Flange, 3¢ @ 3¼¢; Fire-Box, 3¼¢ @ 4¼¢.

**Structural Iron.**—The same remarks would apply as in the foregoing paragraph, although it is felt to be reasonably certain that full employment will be found during the coming winter. There is a good deal of business in hand already, but a good deal more will be required to keep all the mills running to their full capacity, but, as we have said, the chances appear to be very favorable. Prices about as follows: 2.10¢ @ 2.15¢ for Bridge Plate; 2¢ @ 2.10¢ for Angles; 2.6¢ @ 2.7¢ for Tees, and 3.3¢ for Beams and Channels, Iron or Steel.

**Sheet Iron.**—The demand has been quite active of late, and while prices are firm it has not been found practicable to make any advance thus far. Mills are running to their full capacity, and find no difficulty in placing their entire output. Quotations are as follows:

| | |
|---|---|
| Best Refined, Nos. 26, 27 and 28 | 3¼ @ 3½¢ |
| Best Refined, Nos. 18 to 25 | 3 @ 3¼¢ |
| Common, ¼¢ less than the above. | |
| Best Bloom Sheets, Nos. 26 to 28 | 4⅛ @ 4¾¢ |
| Best Bloom Sheets, Nos. 22 to 25 | 4 @ 4¼¢ |
| Best Bloom Sheets, Nos. 16 to 21 | 3½ @ 3¾¢ |
| Blue Annealed | 2.8 @ 3 ¢ |
| Best Bloom, Galvanized, discount | 62½ % |
| Common, discount | 67½ % |

**Steel Rails.**—There is more inquiry for Rails, but not much actual business has been taken of late. For fall and winter delivery $29 at mill is quoted, although concessions might possibly be had on very desirable orders. Manufacturers are very cautious in quoting for next year's deliveries, as the cost of production is increasing and present prices are too low to permit of any risks being taken. Probably $30 might be quoted for that delivery on moderate-sized lots.

**Old Rails.**—No business to report in this market. There are bids of $23 for spot T's, with sellers at $24 for shipment or $24.50 for lots in store.

**Scrap Iron.**—Market firm and moderately active, but without change in prices, which are about as follows: $20.50 @ $21 for cargo lots; $21.50 @ $22 for carload lots, delivered, or for choice $22.50 @ $23; No. 2 do., $14 @ $15; Turnings, $13 @ $14; Old Steel Rails, $20 @ $21; Cast Scrap, $15 @ $16; do. Borings, $9 @ $10; Old Fish Plates, $25 @ $26. Old Car-Wheels, $17 @ $18, Philadelphia, or its equivalent.

**Wrought Iron Pipe.**—The mills are all very busy, the bulk of the demand being for the smaller sizes. Prices continue firm, and are generally adhered to. Discounts are quoted as follows: Black Butt-Welded, 55 %; on Galvanized do., 45 %; on Black Lap-Welded, 65 %; on Galvanized do., 52½ %; on Boiler Tubes, 60 %.

**Nails.**—A slightly improved demand is the only feature worthy of note. Prices do not improve to any extent, although mills are looking for an advance at an early date and say it would prove beneficial to the trade at large, and claim that at the prices now ruling it would pay better to stop the machines. We quote $2 for small lots from store, with the usual discount on large quantities.

*By Telegraph.*—The market for Bars and Skelp Iron shows increasing strength and activity; a large amount of business is offered at full prices, but sellers now ask 2¢ for Skelp.

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E. J. Etting, of Philadelphia, has been appointed agent for the sale of Wire and Wire Rope made by the Trenton Iron Co., of Trenton, N. J. Quotations on application to Mr. Etting, 222 South Third street, Philadelphia.

## Chicago.

Office of *The Iron Age*, 95 and 97 Washington St., CHICAGO, October 1, 1888.

**Pig Iron.**—The condition of business has been very much the same as the preceding week. Buying was largely confined to small-lot orders. One sale of 2000 tons Charcoal Iron for Car Wheels is reported. The period of delivery covering ten months forced the purchaser to pay a small advance on prices for immediate shipment. Furnacemen do not anticipate much change in the prices of Iron for this year's delivery, but, at the same time, are not willing to make additional contracts at prevailing figures when deliveries extend beyond December. Some furnaces have contracted so far ahead that they claim to be temporarily out of the market. There is no anxiety on the part of sellers to take orders, at least not enough to offer concessions to buyers who are still in the market. Freight rates from Mahoning and Shenango valleys to Chicago have been advanced 15¢ per ton, taking effect to-day. This will have no direct effect upon business or prices, as the advance was anticipated on late sales and former rates on existing contracts protected by railroads. The Southern Coke furnaces have adopted the system of grading which is used by all Northern furnaces and announce that all shipments on and after October 1st will be made under the new schedule. We change our nomenclature to correspond with the circular published elsewhere. We make the following cash quotations, f.o.b. Chicago: Lake Superior Charcoal, all numbers, $19.50 @ $20.50; Alabama Car-Wheel, $26.25; Jackson County Softeners, No. 1, $18 @ $18.50; Hocking Valley Soft Foundry, No. 1, $17.50 @ $18; American Scotch (Blackband) No 1, $19 @ $20; other Ohio Scotch Irons, No. 1, $18 @ $19; Lake Superior Coke, No. 1, $17.50 @ $19; No. 2, $17; No. 3, $15.50 @ $16; Southern Coke, No. 1 Foundry, $17.75 @ $18; No. 2 Foundry, $17 @ $17.50; No. 3 Foundry, $16.75; No. 1 Soft, $17.25; No. 2 Soft, $16.75; Gray Forge, $16.25.

**Bar Iron.**—The demand is principally for small lots both from consumers and country dealers. From the latter mixed orders covering a variety of articles not classified as Bar Iron, to make up a carload, are very common among large jobbers, one house reporting an average of 8 to 10 cars a day. Large buyers are either supplied or waiting for future events. It is said that the mills are full of work and stocks in jobbers hands in good shape, but not large. Prices are quoted at 1.90¢ in carloads and 2¢ in small lots from store. Mill price, Chicago delivery, range from $1.75 to $1.80 to most of the trade, and claims of weakness made by some who wish to place orders.

**Structural Iron.**—The season is so far advanced that new business is confined to small lots from stock and deliveries under contract. Mill prices f.o.b. Chicago are: Angles, 2.25¢; Universal Plates, 2.25¢ @ 2.30¢; Tees, 2.50¢; Beams and Channels, 3.40¢. Store prices: Angles, 2.40¢ @ 2.50¢; Tees, 2.60¢ @ 2.70¢; Beams, 3.80¢.

**Plates, Tubes, &c.**—Some improvement in the demand for Heavy Sheets is noted, though orders, as a rule, are for small lots at full market prices. No new features are mentioned in connection with the trade on Plates and Tubes. Store quotations are as follows: Heavy Sheets, Nos. 10 to 14, 2.65¢ @ 2.70¢; Tank Iron, 2.55¢; Tank Steel, 2.80¢; Shell Iron, 3¢; Shell Steel, 3.25¢; Flange Iron and Steel, 4¢; Fire-Box Steel, 4.75¢ @ 5.75¢; Boiler Rivets, 4¢ @ 4.25¢; Ulster Iron, 3.75¢; Boiler Tubes, 62½ % off.

**Sheet Iron.**—It seldom occurs that this market is not well supplied with Light Sheets. In fact, the supply has usually been so abundant that consumers gave themselves no concern about obtaining material in advance of their requirements. The condition, however, is very different this fall. Buyers are searching in every quarter for stock that cannot be had. Jobbers who are regularly receiving a portion of their supply under contract say that it is distributed as fast as it comes in, never remaining long enough in their hands to be stored. All numbers are scarce, but No. 26 seems to be most wanted and the most difficult to obtain. On recent inquiries mills quoted on a basis of 3.30¢ for No. 27, Chicago delivery. Jobbers' prices from store are 3.20¢ for No. 24; 3.30¢ for Nos. 25 and 26 and 3.40¢ for No. 27.

**Galvanized Iron.**—The volume of trade continues to be very large, but the broken line of stock is a menace to increasing the business to still greater figures. In dull times the special brands have the preference with consumers at a shade higher prices, but in the present condition of the market all good Iron is in demand and commands the same price. The quantity of Iron consumed by the Cornice trade this season is much less than for several years previous. Out of store jobbers quote Juniata at 60 % off and Charcoal at 60 % and 5 % off for small lots.

**Merchant Steel.**—The immediate future gives no promise of buyers for general consumption breaking loose from their established policy of ordering small lots of Steel as they need it. Implement manufacturers having placed their orders for the year's supply, business resumes the old rut of a half-alive trade and irregularity in prices. Regular store quotations are as follows: Bessemer Bars, 2.30¢ @ 2.40¢; Tool Steel, 8½¢ @ 9½¢; Specials, 13¢ @ 25¢; Crucible Spring, 4.40¢; Open-Hearth Spring, 2.90¢; Open-Hearth Machinery, 2.75¢ @ 3¢; Crucible Sheet Steel, 7¢ @ 10¢. The above prices are frequently shaded. The demand for Plow Steel in special shapes this season has been considerably above the average.

**Steel Rails.**—Small lots aggregating perhaps 10,000 tons were booked in this market during the past week for delivery this fall. Negotiations have been opened with some roads for Rails to be delivered in the early part of next year, but no sales are reported It is rumored that one mill offered to accept an order for 5000 tons, March, 1889, delivery, at less than $30 ℔ ton. The statement has neither been verified nor denied. If true, it is reasonable to suppose the low figures were made for the purpose of securing enough work to keep their mills in operation during the winter months. Rail-makers here repudiate the statement published in the daily press that the American Association contemplate forming a combine with foreign manufacturers. Mills continue to quote as a nominal price $30 @ $31.

**Old Rails and Wheels.**—Dealers report that there were no transactions in Old Rails during the past week. On one lot of 500 to 1000 tons $24, Chicago, was offered and refused. Holders are asking about $24 at yard, and mills are unwilling to pay more than $24 at mill, one buyer having offered $23, Chicago, the rate of freight being 75¢ between this and the point of consumption. The demand for Old Steel Rails has also been very light. Nominal quotations for long lengths are $19.50; Short Ends, $16.50. Car-Wheels are reported very scarce and the market quiet. Quotations range from $19 to $20, according to the selection.

**Scrap Iron.**—Few transactions in the Scrap market have occurred. Prices asked by dealers are somewhat higher than mills feel warranted in paying. The demand does not seem to be very urgent, and both sides are holding pretty firmly to their ideas. We make the following quotations ℔ ton of 2000 lb: No. 1 Forge, $19.50 @ $20.50; Track, $18.50 @ $19.50; No. 1 Mill, $14.50 @ $15; Tank and Pipe, $13; Sheet, $9.50; Horseshoes, $19; Axles, $25; Cast Machinery, $14.50; Stove Plate, $11; Cast Borings, $8.75; Locomotive Tires, $16.50; for Mixed Country Scrap dealers offer $13.50 @ $14.

**Hardware.**—Business among the larger jobbing houses continues to be very active. Competition has become quite strong and those who have the most adequate means of purchasing goods and canvassing the trade are reaping the greatest benefit from the season's business. The demand for fall goods started up at least 30 days earlier than usual, but it does not now look as though this would bring a decline in the demand any earlier than in former years. The excellent crops and the recent great advance in the price of wheat in this market are being felt throughout the Northwest. The impression prevails that the advanced prices for grain will continue during the winter and give to consumers a better supply of money than they have had for a long time. While there is a general hardening of prices all along the line, Lead and Tin and articles in which they are largely a part of the manufacture are most conspicuous in the advance. Prices have been fairly well supported during the entire season, and business in the aggregate has been much better, notwithstanding frequent cuts on specials or leaders.

**Nails.**—The demand for Nails at this season is a little disappointing. Trade is referred to as being lighter than for several years before, though prices continue to be pretty well maintained. Steel Cut Nails are quoted at $2.05 @ $2.10, carload lots, and $2.15 from store, in small lots. Wire Nails, $2.50 @ $2.60. The Parallel Chisel Pointed Nail is beginning to be recognized as a factor in the trade for which there is considerable demand for sample lots. Manufacturers quote $2.50 rates, Wire Nail card.

**Barb Wire.**—The condition of the market remains unchanged. The demand continues very light and only for small quantities. The stocks in manufacturers' hands are large, but those in the hands of jobbers are lighter than usual. Quotations are nominally 2.90¢ for Painted and 3.65¢ for Galvanized.

**Pig Lead.**—Consumers have taken a trifle more interest in the market during the week and prices ruled steady at 4.90¢ @ 4.95¢ for October delivery.

## Chattanooga.

Office of *The Iron Age*, Carter and 9th Sts., CHATTANOOGA, October 1, 1888.

The opening up of nearly all the channels of transportation, which has occurred during the past two or three days, has given a stimulus to business, and trade in nearly all lines has resumed, practically, its normal condition. There is now no interruption in traffic between this point and any of the trade centers of the South, with the exception of perhaps one or two in Florida, and a few days will probably remove them. Merchants and railroads are already beginning to feel the beneficial effects of the unusually large crops that have been raised throughout the entire South, and from the present time forward there is every likelihood of a period of great activity in all lines of business. Many of the railroads have, during the present year, endeavored to fortify themselves on the question of transportation by adding very much to their rolling stock, but still the deficiency is very great, and some of the largest furnaces are beginning to be inconvenienced for want of cars to haul their stocks and take away their products.

**Pig Iron.** — There is no particular change to note in this article. The demand is fully equal to the output of the furnaces, and prices are being well maintained. The local demand fell off slightly during the past two or three weeks, but there is no doubt that it will soon assume its usual proportions, as there are now no practical obstructions in the way. From inquiries that are being received from Southern foundries it is fair to presume that the consumption from this quarter will considerably exceed any former period, as the winter months are generally the most active with them. The Western markets appear still to be the most favorable ones to which the Southern furnaces can ship their output, although the East is not behind in their requirements. There have not been the large transactions that have characterized the trade in times gone by, but sales are confined more to small round lots, and inquiries from speculators have not been as frequent as they were some weeks ago. Upon the whole, the market is in a very satisfactory condition, and the furnaces are being kept comfortably sold ahead on current demands.

## Cincinnati.

Office of *The Iron Age*, Fourth and Main Sts., CINCINNATI, October 1, 1888.

**Pig Iron.**—In general the local market for Pig Iron has been quiet, yet the volume of business has not been small, and a few large buyers are reported to have entered the market quietly, made several large contracts and retired, without knowledge by the trade at large of their presence. A confident tone has prevailed, but there has been no advance in market prices. There is scarcely a new feature in the Iron interest proper upon which to dwell; sellers are satisfied for the time being, and buyers are not anxious. Transportation rates from Southern furnaces to

points on and north of the Ohio River have been advanced 15¢, and some purchases and contracts have been made recently at the old schedule. The local money market is extremely easy, unusually so for this season. Among the sales, in addition to the large contracts previously referred to, are 800 tons of Southern Car-Wheel Iron, 100 tons per month for eight months, at $24.50, cash, and $25, four months' time; 500 tons No. 2 Southern Foundry, at $16.50; 600 tons No. 1 Mill at $15.25, and moderate amounts No. 2 Mill at $14.50 ₣ ton, cash. The following are the approximate quotations for the local market, cash, f.o.b. Cincinnati:

*Hot-Blast Foundry.*

| | |
|---|---|
| Southern Coke, No. 1 | $17.50 @ $18.50 |
| Southern Coke, No. 2 | 16.50 @ 17.50 |
| Southern Coke, No. 3 | 15.50 @ 16.00 |
| Ohio Soft Stone Coal, No. 1 | 17.00 @ 17.50 |
| Ohio Soft Stone Coal, No. 2 | 15.50 @ 16.00 |
| Mahoning and Shenango Valley | 17.50 @ 18.50 |
| Hanging Rock Charcoal, No. 1 | 20.50 @ 22.50 |
| Hanging Rock Charcoal, No. 2 | 19.50 @ 22.00 |
| Tennessee and Alabama Charcoal, No. 1 | 18.50 @ 19.50 |
| Tennessee and Alabama Charcoal, No. 2 | 17.00 @ 18.00 |

*Forge.*

| | |
|---|---|
| Strong Neutral Coke | 14.75 @ 15.25 |
| Mottled Neutral Coke | 13.50 @ 14.00 |
| No. 1. Mill Coke | 15.00 @ 15.50 |
| No. 2 Mill Coke | 14.50 @ 14.75 |

*Car-Wheel and Malleable Irons.*

| | |
|---|---|
| Southern Car-Wheel | 20.00 @ 23.00 |
| Hanging Rock, Cold Blast | 22.00 @ 25.00 |
| Lake Superior Car-Wheel and Malleable | 20.50 @ 21.50 |

**Manufactured Iron.**—There has been an increased volume of business and a much stronger tone. The orders from Stove manufacturers are liberal and the demand for Sheet Iron is especially active. One thousand tons Bar Iron sold at 1.70¢ at the mill. Full prices on all kinds are now realized, and an advance is imminent. Common Bar Iron, 1.90¢; Charcoal Bar Iron, 2.90¢ @ 3¢; Sheet Iron, Boiled, Nos. 10 to 27, 2.50¢ @ 3.25¢; Sheet Iron, Charcoal, Nos. 15 to 25, 3½¢ @ 4½¢ ₣ lb.

**Nails.**—The market has ruled strong in tone, in sympathy with Pig and Manufactured Iron, and a fair volume of business has been transacted. Jobbing prices are based upon 12d @ 40d, which sell at $2.10 ₣ keg, with 10¢ rebate in carload lots, at mills. Steel Nails sell at $2.10 and Steel Wire Nails at $2.75 ₣ keg.

**Old Material.**—The market has been unsettled; the offerings of Old Wheels have been freer and prices have declined. At the close it would be difficult to sell Old Rails at $23.50, but several days ago this rate was bid here, and sales were made in St. Louis at $24, cash. Old Wheels have met less inquiry, but the offerings are not large; the nominal quotable rate is $19 @ $20, spot cash.

## Louisville.

LOUISVILLE, KY., October 1, 1888.

**Pig Iron.**—The market has remained steady during the past week. Sales of Iron in small lots have been made, with no large transactions to report. It is thought, however, that during the next two or three weeks the market will be more active and that prices will slightly advance. The contemplated change of names to designate the grades of Southern Irons in accordance with other localities takes effect October 1. Fifteen furnaces have agreed to follow out this plan, which, it is thought, is an advantageous one. Old Rails continue active, prices being held firm at $24. Old Wheels at $21. It was thought that the trouble in the South over yellow fever would curtail the production of Pig Iron, but furnaces have continued to run steady, and the output has been fairly good. We quote as follows:

| | |
|---|---|
| Southern Coke, No. 1 Foundry | $17.00 @ $18.00 |
| " No. 2 " | 16.00 @ 16.50 |
| " No. 2½ " | 15.50 @ 16.00 |
| Hanging Rock Coke, No. 1 Foundry | 17.25 @ 17.75 |
| Hanging Rock Charcoal, No. 1 Foundry | 21.00 @ 23.25 |
| Southern Charcoal, No. 1 Foundry | 18.00 @ 18.50 |
| Silver Gray, different grades | 14.50 @ 15.25 |
| Southern Coke, No. 1 Mill, Neutral | 14.75 @ 15.25 |
| " No. 2 " " | 13.75 @ 14.75 |
| " No. 1 " Cold Short | 14.25 @ 14.75 |
| " Charcoal, No. 1 Mill | 15.75 @ 16.50 |
| White and Mottled, different grades | 13.50 @ 13.75 |
| Southern Car-Wheel, standard brands | 23.00 @ 24.00 |
| Southern Car-Wheel, other brands | 19.25 @ 21.25 |
| Hanging Rock, Cold Blast | 22.25 @ 25.25 |
| Hanging Rock, Warm Blast | 19.25 @ 20.25 |

## Cleveland.

CLEVELAND, October 1, 1888.

**Iron Ore.**—The market has lost some of its activity by reason of the fact that the Hard Ores are nearly all sold up and buyers are hesitating about paying the advanced price for other brands. Ore consumers in the East are making heavy demands, and are said to have purchased 25,000 tons of non-Bessemer Hematites at $4.40, the same Ore having sold at the opening of the season for $3.75. Additional sales of a second-class grade of Bessemer Ore have also occurred, the price paid being 60¢ in advance of midsummer quotations. Transportation rates have advanced another point, and the consequent addition in the cost of Ore at the mines causes buyers to hesitate about taking Ores that would be eagerly purchased at 30¢ ₣ ton less. Furnacemen insist that the condition of the Iron market does not warrant them in paying high prices for Ore. There is little doubt, however, about the sale of all the Ore mined. With all the advances made during the past three weeks, prices for Ore are still $1 below those prevailing at a corresponding period last year. The season's shipments closely aggregate 3,310,000 tons, and will undoubtedly aggregate 4,000,000 tons by December 1.

**Pig Iron.**—Mahoning and Shenango Mill Irons have advanced 50¢ ₣ ton, and a still further increase in price is anticipated. Select Foundry is bringing $18, and Mill Irons are quoted at $16, cash. Dealers report the market very firm, with an upward tendency all around, although Lake Superior Charcoals are somewhat weak.

**Manufactured Iron.**—Structural Iron sells very freely. Bar Iron at $1.70 is in excellent demand, and Sheets at $3.10 for No. 27 are eagerly inquired for.

**Scrap Iron.**—Old American Rails are still held at $25, and, although a few scattering sales are reported, there is a general belief that such a price cannot be much longer maintained.

**Nails.**—Steel Wire Nails have advanced a point, but local dealers have cut common Iron Nails to $1.90, and Steel Nails to $2 ₣ keg. Cut Iron Spikes have advanced to $2.50, and Steel spikes to $2.75.

## Detroit.

WILLIAM F. JARVIS & CO., under date of October 1, report as follows: While the market has shown no signs of weakness during the past week, the volume of business has been a little under that of the previous one. The demand for 50 to 100 ton lots has been up to the average, but no very large sales have been made. Car-Wheel Irons are in the best demand, and more inquiries are received for high numbers than is usually the case, thus showing that Old Car-Wheels are scarce, and what few lots are offered are held at from $1 to $1.50 ₣ ton above price of regular brands of L. S. Charcoal. With a quiet but firm market we quote as follows:

| | |
|---|---|
| Lake Superior Charcoal, all numbers | $20.00 @ $20.50 |
| Lake Superior Coke, all ore | 19.75 @ 20.25 |
| Lake Superior Coke, cinder mixed | 18.50 @ 19.00 |
| Standard Ohio Black Band | 19.75 @ 20.25 |
| Southern No. 2 | 17.75 @ 18.25 |
| Southern Gray Forge | 16.25 @ 16.75 |
| Southern Silvery | 17.00 @ 17.50 |
| Jackson County (Ohio) Silvery | 18.50 @ 19.00 |
| Old Wheels | 20.50 @ 21.50 |

## Pittsburgh.

Office of *The Iron Age*, 77 Fourth Ave., PITTSBURGH, October 2, 1888.

River navigation is again suspended, which, of course, restricts business somewhat; but it is not a matter of so much importance now as it was some years ago, before we were so well supplied with railroads. It will not be many years before the Ohio River is slack-watered all the way from Pittsburgh to Cincinnati, a distance of almost 500 miles; and once it is, the Ohio Valley will be filled with manufactories; as it is, this great valley is becoming noted more and more every year for her manufacturing interests. In addition to Iron, Steel and Glass, the potteries of East Liverpool and brickyards of New Cumberland are looming up. Nearly all manufacturers between Pittsburgh and Wheeling are supplied with natural gas, and, in not a few instances, at a less price than the Pittsburgh manufacturers have to pay. Here the cost of gas has been almost doubled within the past year, and some consumers have gone back to coal.

**Pig Iron.**—There has been no important change in the situation during the past week. Business continues quiet as compared with what it was a few weeks ago, but still there is a very fair degree of activity. The outlook indicates that there will be a good, healthy trade for some time to come, and the apprehension entertained of a speculative movement has subsided. There is some Iron held on speculation, but it does not amount to much, and is not likely to have any effect upon the market. Some furnacemen refuse to sell to speculators. We quote prices as follows:

| | | |
|---|---|---|
| Neutral Gray Forge | $15.50 @ $16.50, | cash. |
| All Ore Mill | 16.75 @ 17.50, | " |
| White and Mottled | 15.00 @ 15.50 | " |
| No. 1 Foundry | 18.00 @ 18.50, | " |
| No. 2 Foundry | 17.00 @ 17.50, | " |
| No. 1 Charcoal Foundry | 24.00 @ 24.50, | " |
| Cold Blast Charcoal | 25.00 @ 27.00, | " |
| Bessemer Iron | 18.00 @ .... | " |

Included in the sales reported was a lot of 12,000 tons Gray Forge, standard brand, for immediate delivery, at $16.50, cash, but this is an outside price; brokers state that they have very good Irons to sell at $16.25, and even $16, cash. We can report sales of some 3000 tons Bessemer, at $18, cash.

**Muck Bar.**—There is less inquiry, and, while prices remain unchanged, the market is weaker; we continue to quote at $28.50 @ $29, cash, as to quality, delivery, &c. There is nothing like the demand there was a few weeks ago.

**Ferromanganese.**—Sales of 80 % at $55.50, cash; Speigel quoted at $28.50, cash, for 20 %.

**Manufactured Iron.**—There is a continued fair degree of activity. Orders are still coming forward pretty freely, and the mills generally are pretty well employed. Some of them have all they can do. Manufacturers continue to complain that prices have not advanced sufficiently to cover the enhanced cost of the raw article, and it was this more than anything else that arrested the upward course of the latter. We continue to quote Bars at 1.80¢ @ 1.85¢; Plate, 2.20¢ @ 2.25¢, and No. 24 Sheet, 2.80¢ @ 2.85¢; Skelp Iron is in good demand, and prices are quoted steady at the recent advance—Sheared: 2.12¢ @ 2.15¢, Grooved, 1.85¢ @ 1.90¢.

**Nails.**—There is a continued fair business, although the factories here are by no means busy, but it is all possibly that we can reasonably expect at this particular time and under existing circumstances. So far as we can learn, full card rates are still being realized, and there is no room to cut, as the cost of Nail Plate has gone up fully $1 ₣ ton. Pittsburgh manufacturers are refusing to make any concession whatsoever from the card, and there is

reason to believe that Wheeling manufacturers are acting likewise. We continue to quote at $1.90, 60 days, 2 % off for cash.

**Wrought Iron Pipe.**—There is a continued good demand for small sizes; large sizes continue dull, owing to the fact that natural gas companies are buying very sparingly as compared with former years, as those points near to the gas territories are pretty well "piped." Prices remain unchanged with the exception of Boiler Tubes, which are higher. Discounts on Black Butt-Welded Pipe, 55 %; on Galvanized do., 50 %; on Black Lap-Welded, 65 %; on Galvanized do., 55 %; Boiler Tubes, 62½ % off; 2-inch Tubing, 13¢ ℔ foot net; 5⅝-inch Casing, 40¢ ℔ foot net, large lots.

**Steel Rails.**—Heavy sections are still quoted at $29.50 @ $30, free on cars at mill.

**Billets.**—Bessemer Steel Billets are still quoted at $29 @ $29.50, cash, delivered on cars at makers' works; sale 1000 tons at $29 and 500 tons Nail Slabs at $29. Sales of Bloom and Rail Ends (domestic) reported at $19 @ $19.50.

**Old Rails.**—There has been very little business during the past week; consumers generally are pretty well stocked and for the time are out of the market; however, the offerings are light and prices are fully maintained. We continue to quote American Tees at $25 @ $25.25, with some few small sales reported within the range.

**Merchant Steel.**—There is a fair business at unchanged prices. Tool Steel, standard brands, 8½¢; Crucible Machinery, 5¢; ditto Spring, 4½¢; Open Hearth Machinery, 2¾¢.

**Railway Track Supplies.**—No change reported in prices, but there is a possibility that they might be shaded on a desirable order. Spikes, 2¢, 30 days, delivered; Splice Bars, 1.80¢ @ 1.85¢; Track Bolts, 2.85¢ with square and 2.95¢ with hexagon Nuts.

**Old Material.**—There is less doing, but prices are maintained. No. 1 Wrought Scrap, $21, net ton; Car Axles, $26 @ $27; Wrought Turnings, $14.50 @ $15; Cast Scrap, $16 @ $16.50, gross; Old Car Wheels, $20, gross.

## New York.

Office of *The Iron Age*, 66 and 68 Duane street, NEW YORK, October 3, 1888.

**American Pig.**—The week has been uneventful, sales being on a moderate scale, but at firm prices, though it is reported that some of the Southern furnaces are less sanguine of the immediate future than they have been of late. Reports relating to the condition of consumers vary. The general conclusion, however, seems to be that the majority of them have covered their requirements for the next few months, and that that is particularly the case with those who secured low rates of freight by canal. It is insisted, however, that others have not yet bought all that they need, and their appearance in the market is looked forward to in the near future. Standard No. 1 Northern Iron is still available between the range of $18 and $19, while No. 2 is quoted at $17 @ $17.50, and Gray Forge, nominally, $16 @ $16.50.

**Scotch Pig.**—From Albany and Troy and from New England come reports of greater interest on the part of founders in those substitutes for Scotch Iron which are chiefly used in the West—that is American Scotch of the Mahoning Valley and the Jackson County softeners. We hear that these are offered at Albany at $20 @ $20.75, with reports of shading under the former figure for some grades. When it is considered that it is necessary to add from 70¢ to 80¢ to the price of tidewater foreign Scotch prices to arrive at the figures for the same point, it will be observed that there is considerable saving to those who use the American product. Some sellers of Scotch Iron in this market are still placing a little at figures which are below the cost price on the basis of present freights. This they are able to do, since they have freight room contracted at lower figures. We quote: Coltness, $21.75 @ $22, nominally; Shotts, $20.50 @ $21; Langloan, $20.50 @ $20.75, and Dalmellington, $20.25 @ $20.50.

**Spiegeleisen.**—Besides a lot of 10,000 tons of 10% closed recently, we hear of sales of over 5000 tons of 20 % Spiegel, for early delivery, all at private terms. A part of this was afloat in sailers, so that low figures could be made. For the same delivery steamer shipment would be necessary, which would cost from $27.50 to $27.75. For later delivery, $27 may be quoted for English. The rise has been due both to high freights on the metal and particularly to scarcity of Ore and high freights thereon. Thus we hear that 19/ was paid for freight on Manganiferous Ore from Spain to Maryport, England. In Ferromanganese similar quotations of freights exist. Foreign is quoted $55 @ $56 at tide. We hear of a small lot of domestic 80 % sold by second hands at $56, delivery Wheeling.

**Plates.**—We quote Iron Tank, 2.1¢ @ 2.2¢; Shell, 2.3¢ @ 2.4¢; Steel Tank, 2.2¢ @ 2.3¢; Shell, 2.4¢ @ 2.5¢; Flange, 2.65¢ @ 2.75¢, and Fire-box, 3.5¢ @ 4¢.

**Structural Iron.**—We quote Sheared Plates, 2¢ @ 2.1¢; Universal Mill Plates, 2.1¢ @ 2.2¢; Angles, 2.1¢ @ 2.15¢; Tees, 2.5¢ @ 2.6¢, and Channels and Beams, 3.3¢.

**Steel Rails.**—There is an evident disposition to keep sales as quiet as possible, and the impression is gaining ground that in reality more has been done than comes to the surface. We hear of sales by Eastern mills aggregating about 16,000 tons, a part of it for early delivery, and also of 20,000 tons sold by one Western mill during the past four or five days. An effort is being made to secure somewhat better prices for delivery in 1889, the aim of the Western mills being $31 at Chicago, and of the Eastern mills $29 at mill. We do not hear of any business having been done at these figures. We continue to quote, for winter delivery, $28 @ $28.50 at Eastern mill.

**Wire Rods.**—The only transaction of any consequence reported is a lot of 1200 tons of foreign for the St. Louis market, to be shipped via New Orleans. We quote $39.50 @ $40.

**Old Rails.**—The market has been very quiet, no sales of any consequence being reported during the week under review. It is generally conceded that the feeling is a little less heated, and we hear of at least one lot of Tees being offered at $23.50. It is evident that the majority of the Eastern and Western mills have pretty well covered requirements for the present, with one notable exception, and it is likely that for the next 30 or 60 days they will hold aloof. We hear that a growing number of trades have been made with Steel mills, which have taken the old material and furnished new Rails to the purchaser.

**Scrap.**—We hear of the sale of a number of lots, between 200 and 300 tons each, at $21 from yard, and $21 delivered to lighter The market is strong at the close.

**Fastenings.**—Manufacturers continue to ask $2.25, delivered, for Spikes. Angle Bars are 2.05¢ @ 2.10¢.

## Financial.

Accounts from some sections of the South are rather more favorable, indicating some relaxation of the quarantine imposed at various points, and jobbers in this city are receiving a renewal of orders for merchandise; but September will not make as favorable a showing in the amount of sales as the corresponding month last year. Railroad traffic is remarkably good, so that, although the season for increased activity has hardly opened, some of the principal lines complain of their inadequate equipment. Wild speculation in wheat has caused much disturbance, but the effects, it is believed, must be temporary. The enormous corn crop, on account of scarcity in Europe, must move forward in full volume, as the failure of the harvest in Germany is attracting attention. Herr Richter, in an article in the *Liberal Zeitung*, calculates that Germany will require 13,000,000 hl. of grain to meet the deficiency. The people, he says, must therefore demand an immediate diminution of the duty on cereal imports. The official report of the crops in France shows that 7,055,161 hectares of land were this year planted with corn, yielding 96,430,062 hl., against 6,967,466 hectares in 1887, yielding 112,456,107 hl. The Washington weather crop bulletin shows conditions favorable for cotton, cane and rice during the past week. The financial outlook is also favorable, both as regards the general market and the Government Treasury. It is a fact worthy of special observation that with the reduction of $12,000,000 and upward in the public debt during September the aggregate interest-bearing debt for the first time drops below the $1,000,000,000 limit.

The Stock Exchange market has been active and strong, mainly on the announcement that the Granger roads had come to a harmonious agreement respecting rates, the St. Paul having assented to a restoration of former tariff. London prices were higher, with some buying orders. Reading was heavy on the report of decreased net earnings. On Friday, as on the previous day, the market was in full possession of the bulls. The adjustment of Northwestern rates was considered important, especially for the reason that failure had attended previous efforts to bring the Burlington and Northern and other belligerent roads into line. On Saturday speculation was again buoyant. Southern stocks were bought on reports of low temperature in that section, which indicated the possibility of early frost, the abatement of yellow fever and the consequent resumption of traffic. On Monday the news that the Chesapeake and Ohio would be reorganized without foreclosure started the stocks and bonds of that company upward. Coalers were bought freely. On Tuesday the tone was unsettled by the dearer money and news of the failure of the Traders' Bank of Chicago—an event which proved to have little significance.

United States bonds are quoted as follows:

| | |
|---|---|
| U. S. 4½s, 1891, registered | 108 |
| U. S. 4½s, 1891, coupon | 108 |
| U. S. 4s, 1907, registered | 129 |
| U. S. 4s, 1907, coupon | 129 |
| U. S. currency 6s | 121 |

The wheat market, especially during the latter part of the week, has been much excited by speculation in Chicago, but prices here have been seriously disturbed. The immediate effect was to paralyze the export movement. On Friday one of the oldest firms in the trade was unable to meet its obligations, but in the final settlement there were no serious consequences. With wheat in Chicago advanced to $2 per bushel for September, spot stock in New York advanced on Monday 3¢ to 3½¢ ℔ bushel compared with Saturday, and speculative trading was on an enormous scale, but there was no cash demand.

On Tuesday wheat again advanced 3¢ over the previous day, and the deal is stillgoing on. Corn also advanced. Cotton was dull. Coffee was quiet at a slight advance in futures. Petroleum was strong, with a fair business for export. Provisions were excited and higher, but declined with the advance in wheat. Sugar is strong, but easier for refined, which is now ¼¢ per pound higher than before the trust. The Bay State Refinery, in Boston, shut down by order of the trustees, to check production, and orders were received to shut down the big refineries of Decastro & Donner, in Brooklyn.

The law firm of Shipman-Barlow, Laroque & Choate sent to the Farmers' Loan and Trust Company a certified check for $112.664.84 in settlement for the moneys which James E. Bedell, their employee, obtained from the trust company by means of bogus mortgages.

The weekly bank statement showed a large increase in surplus reserve, amounting to $2,813,450. This makes the surplus now held $14,757,175, against $9,017,100 at the corresponding time last year and $5,963,925 in the first week of October, 1886. In loans there was a further contraction of $690,000; the specie is increased $4,726,700; the legal tenders are down $1,311,800, the deposits other than United States are increased $2,405 800, and the circulation is down $1,091,300. The improvement is largely due to Treasury operations, its disbursements being far in excess of the interior demand for funds. Money on call is 2 @ 3 %. Time loans are quoted at 3 % for 60 days, 4 % for 90 days, 4½ % for 4 months, and 5 % for 7 months. Single-named paper sells at 5 @ 6 %, and fair indorsed at 5 %. The total amount of bonds purchased under the circular of April 17 is $60,186,900, of which $41,631,700 are 4's, and $18,555,200 are 4½'s. Their cost was $73,340,268, of which $53,415,353 was paid for the 4's, and $19,924,915 for the 4½'s. The public debt was reduced $12,247,026 during September and $23,709,000 during the last three months. Net cash in the Treasury amounts to $9,644,845, against $10,676,320 on September 1. The public money in national banks amounts to $57,817,385. The receipts for September were $31,698,174; for three months, $97,526,253; expenditures, $80,161,197.

Sterling exchange is quiet, with rates about $4.84½ for long bills, and $4.88½ for demand. In London, the condition of the money market is uncertain on account of the possible continued withdrawals of gold for South America, where the speculative fever has broken out anew. The *Economist*, of September 22, says: "Judging from the ease that prevails in the New York money market, there does not seem much likelihood of gold being taken for that quarter this autumn, even though we have to buy more wheat than usual, and have to pay higher prices. Gold will not go in payment of these purchases unless it is needed on the other side, and at present it looks as if no such need will arise." The aggregate clearings of 38 cities for the past week show an increase of nearly 10½ %, outside New York the increase was 10½ %. New York shows an increase of 10.3 %, Boston 13½, Philadelphia 4.6, Chicago 20.7, St. Louis 17.4, Baltimore 27.8, Kansas City 11.3, Omaha 22.1, Minneapolis 7.9, Denver 24.5, Galveston 24.7, Detroit 12, Peoria 33.9, Duluth 21.9, Topeka, 26.7, Cincinnati, decrease, 2.4, New Orleans 14.9, Louisville 5.9, Milwaukee 10.8, St. Paul 2.3, Indianapolis 11.8, Memphis 12.3, Wichita 22.6, Norfolk 26.1.

The official reports from Washington of the foreign commerce of the United States for the month of August show a remarkable change, the imports having fallen off from $73,430,384 to $59,929,185. For eight months of the calendar year the comparison is as follows:

| | 1886. | 1887. | 1888. |
|---|---|---|---|
| Total exports. | $488,769,465 | $459,413,678 | $440,223,691 |
| Total imports. | 463,229,769 | 504,539,992 | 504,568,814 |
| Excess of imports..... | .... ..... | $45,126,314 | $64,345,123 |
| Excess of exports..... | $25,539,696 | ..... | ..... |

For the first eight months of 1886 the exports from the United States exceeded the imports over $25,000,000. For the same months of the current year the balance is reversed and the imports exceed the exports upward of $64,000,000, making a difference in the balance of trade of about $90,000,000.

The imports of merchandise at this port during the week were valued at $8,495,000, of which $2,792,000 represent dry goods. Since January 1 the total is $352,141,000, as compared with $354,124,900 for the same time in 1887 and $328,021,000 in 1886. The exports were $7,196,743.

According to the Custom-House report, the exports of specie from this port during the week were $344,000 and the imports $85,000. The total since January 1, respectively, is $28,569,000 and $6,674,000.

According to the estimates made by *Bradstreet's*, the total number of failures in the United States during the nine months of 1888 is 7330. This indicates on a basis of the record for five years past a total of 10,180 failures for the calendar year 1888. The total number of failures in 1887 was 9740. The increase in assets of failing traders, accompanied by the decrease of about one-seventh of the liabilities, as compared with 1887, constitutes a favorable feature of the exhibit, and an examination of the figures shows that the improvement has been general.

The annual report of the Produce Exchange for 1888–89 shows a net surplus of $69,232.27, a gain of $7684.21 over 1887–88. The report of the Gratuity Fund—which was, of course, prepared before Foster's defalcation was discovered—states the surplus or guarantee fund to be $1,138,573.96.

## Coal Market.

Coal is in rather better demand with the approach of cold weather, and a fair business is reported at the advanced prices, but the furor lately experienced is gradually subsiding. At a meeting of the New York Coal agents on Friday, it was determined to make no change for October, and the same was true of the Lehigh Coal Exchange. The companies all report a large business in hand on former orders sufficient to keep them busy for some time ahead. This is true more particularly of orders for the domestic sizes, and for Pea the demand is increasing. To some extent the latter is finding a sale for domestic purposes. Efforts are now chiefly directed to the supply of those points which are liable to be closed by the suspension of navigation and the latter are given a preference. The Western market is absorbing large amounts. Fancy brands are in demand up to the full limit of supply, but the demand for manufacturing sizes is comparatively slow. Inadequate means of transportation continues to cause complaint, interfering with prompt delivery. The Reading company are enlarging their sources of supply in Lykens Valley, also in the Mahanoy region, where a mammoth 50-foot vein lately struck is spoken of as a "bonanza." Tidewater prices are believed to be fully maintained, but it is supposed that the maximum for the season has been reached. Quotations are as follows: Hard White Ash, Broken, $4.15; Egg, $4.40; Stove, $4.65; Chestnut, $4 55; Fine White Ash, Broken, $3.95; Egg, $4.30; Stove, $4.65, Chestnut, $4.55.

Production for the week ended September 29 is on a scale of magnitude unprecedented for this season of the year, from which it may be inferred that operators are fortifying themselves in anticipation of actual needs. For the week the tonnage is 889,553, against 711,248 for the corresponding week last year, and since January 1 27,591,000, as compared with 25,374,000 for the same time in 1887. The Pennsylvania Railroad transported during the week 223,000 tons of Coal, and since January 1 8,427,000 tons, an increase of nearly 1,000,000 tons compared with last year. Reading's shipments comprised 194,000 tons, of which 32,000 went to Port Richmond and 10,000 to Elizabethport.

Bituminous Coal is in good demand; prices irregular. There is some delay in shipments.

Contracts have just been awarded by the Pennsylvania Railroad Company for the construction of a Coal pier at Harsimus Cove, Jersey City, 1200 feet long by 80 feet wide, on which is a trestle for cars, so that Coal can be dumped directly into vessels.

## Imports.

The imports of Iron and Steel, Hardware, &c., at this port from September 24 to September 29, and from January 1 to September 29, inclusive, were as follows:

**Iron and Steel.**

| | Sept. 24 to Sept. 29. Tons. | Jan. 1 to Sept. 29. Tons. |
|---|---|---|
| Pig Iron: Crocker Bros ..... | 989 | 9,262 |
| G. W. Stetson & Co..... | 315 | 12,765 |
| James Williamson & Co..... | 300 | 4,300 |
| Henderson Bros..... | 220 | 1,695 |
| W. H. Walbaum & Co. .... | 300 | 400 |
| E Foley..... | 300 | 200 |
| N. S. Bartlett.. . ..... | 100 | 4,400 |
| Jas. Lee & Co..... | 50 | 375 |
| Spiegeleisen: Naylor & Co... | 1,105 | 9,124 |
| Crocker Bros..... | 631 | 4,883 |
| Dana & Co..... | 500 | 2,903 |
| Steel: A. Milne & Co..... | 60 | 1,072 |
| W. F. Wagner..... | 17 | 1,119 |
| F. S. Pilditch..... | 10 | 350 |
| M. Cohn & Co ..... | 9 | 208 |
| J. Abbott & Co..... | 8 | 448 |
| Chas. Hugill..... | 8 | 228½ |
| Montgomery & Co..... | 8 | 68 |
| Newton & Shipman..... | 4 | 129 |
| C. F. Boker..... | 3 | 185½ |
| Steel Rods: Dana & Co..... | 914 | 4,104 |
| Naylor & Co..... | 450 | 15,971 |
| J. A. Roebling's Sons..... | 100 | 1,359 |
| Cary & Moen..... | 25 | 733 |
| R. H. Wolff & Co..... | 20 | 3,011 |
| American Screw Co..... | 10 | 125 |
| Steel Crop Ends: Dana & Co. | 100 | 1,053 |
| Sleel Blooms: G. T. Carter... | 90 | 90 |
| Steel Billets: A. Milne & Co.. | 286 | 839 |
| Sheel Sheets: Pierson & Co... | 41 | 940 |
| Ogden & Wallace..... | 35 | 172 |
| A. Milne & Co..... | 11 | 52 |
| Steel Hoops: Ogden & Wallace | 5 | 34 |
| Steel Tires: Temple & Lockwood ..... | 4 | 6½ |
| Steel Forgings: Thos. Prosser & Son..... | 127 | 3,675½ |
| Steel Plate Cuttings: Naylor & Co..... | 47 | 95 |
| Iron: A. Milne & Co..... | 150 | 150 |
| Naylor & Co..... | 19 | 19 |
| Iron Beams: R. F. Downing & Co..... | 34 | 325 |
| Iron Wheels: R. F. Downing & Co..... | 10 | 56 |
| Iron Girders: R. F. Downing & Co..... | 92 | 501 |
| Rivet Rods: Bacon & Co ..... | 50 | 111 |
| Sheet Iron: T. B. Coddington & Co..... | 30 | 1,148 |
| Cotton Ties: Wheelock & B., Bullard & W..... | 475 | 925 |
| J. S. Leng's Sons..... | 75 | 1,020 |
| Swedish Bar Iron: C. v. Philip | 50 | 385 |

**Tin Plates.**

| | Boxes. | Boxes. |
|---|---|---|
| Phelps, Dodge & Co. ..... | 18,830 | 416,654 |
| Dickerson, Van Dusen & Co... | 9,279 | 209,566 |
| Pratt Mfg. Co..... | 3,937 | 136,922 |
| N. L. Cort & Co..... | 2,407 | 81,691 |
| Jas. Byrne & Son ..... | 2,043 | 30,595 |
| T. B. Coddington & Co..... | 1,836 | 130,949 |
| A. A. Thomsen & Co..... | 1,636 | 101,085 |
| Merchant & Co..... | 852 | 18,249 |
| R. Crooks & Co..... | 836 | 54,534 |
| G. B. Morewood & Co. ..... | 601 | 36,790 |
| Bruce & Cook..... | 548 | 79,009 |
| E. S Wheeler & Co. . ..... | 273 | 5,983 |
| Newell Bros..... | 50 | 50 |

**Metals.**

| | Pounds. | Pounds. |
|---|---|---|
| Tin: Muller, Schall & Co..... | 538,379 | 8,884,204 |
| Naylor & Co..... | 280,562 | 2,472,928 |
| Phelps, Dodge & Co..... | 224,185 | 1,719,285 |
| American Metal Company.. | 78,409 | 1,282,034 |
| R. Crooks & Co..... | 55,979 | 470,481 |
| Hendricks Bros..... | 43,196 | 339,957 |
| Lehmaier Sons & Company. | 36,811 | 65,630 |
| F. Naumann..... | 3,000 | 3,000 |

| | Casks. | Casks. |
|---|---|---|
| Antimony: American Metal Company | 55 | 260 |
| Phelps, Dodge & Co. | 30 | 500 |

*Irons and Metals Warehoused from September 24 to September 29, Inclusive:*

| | |
|---|---|
| | Pounds. |
| Lead: Schultz & Ruckgaber. | 223,967 |
| | Tons. |
| Iron: A. Milne & Co. | 76 |

**Hardware, Machinery, &c.**

Am. Meter Company, Hardware, cs., 25
Bainbridge, H. & Co., Mach'y, cs., 3
Boker, Hermann & Co., Mdse., cs., 5; Hardware, cs., 6; Detonators, cs., 8; Mdse., cs., 9; Arms, cs., 28
Clark Thread Company, Mach'y, cs., 55
Curley, J. & Bro., Mdse., cs., 3
Dunham, Buckley & Co., Hardware, case, 1
Field, Alfred & Co., Mdse., cs., 50
Folsom, H. & D., Arms, cs., 10
Graef Cutlery Company, Cutlery, cs., 4
Hartley & Graham, Guns, cs., 8
Lau, J. H. & Co., Arms, cs., 26
Lewis & Conger, Knife Cleaners, cs., 6
Taylor, Thos., Mdse., cs., 6
Schoverling, A., Arms, cs., 58
Shoverling, Daly & Gales, Arms., cs., 20
Vom Cleff & Co., Skates, cs., 5
Wiebusch & Hilger, Lim., Mdse., cs., 10; Hardware, cs., 6
Witte, John G. & Bro, Cutlery, cs., 2
Order: Ironwork for Mexico, pkgs., 154; Hardware, cs., 34; Mach'y, &c., cs., 29.

*Exports of Metals.*

| | Sept. 29. to Sept. 29. Pounds. | Jan. 1. to Sept. 29. Pounds. |
|---|---|---|
| Copper: J. Abbott & Co. | 225,000 | 11,120,619 |
| Lewisohn Bros. | ..... | 3,929,022 |
| F. A. Lomal | ..... | 2,581,293 |
| American Metal Company | 56,000 | 5,405,854 |
| G. H. Nichols | ..... | 223,939 |
| J. Bruce Ismay | ..... | 112,000 |
| S. Mendel | ..... | 560,000 |
| Ledoux & Co. | ..... | 110,276 |
| Muller, Schall & Co. | ..... | 430,000 |
| Copper Queen Con. M. Company | ..... | 224,034 |
| J. Kennedy, Tod & Co. | ..... | 112,026 |
| H. Becker & Co. | ..... | 1,250 |
| Orford C. & S. Rfg. Company | ..... | 449,881 |
| Robt. M. Thompson | ..... | 125,000 |
| Thos. J. Pope, Sons & Co. | 145,000 | 1,277,130 |
| J. Parsons & Co. | ..... | 420,000 |
| Naylor & Co. | 112,709 | 392,709 |
| Bridgeport Copper Company | ..... | 112,000 |
| C. Herold | ..... | 250,000 |
| Phelps Bros. | ..... | 6,250 |
| R. W. Jones | ..... | 189,984 |
| Ladenburg, Thalmann & Co. | ..... | 229,371 |
| W. H. Crossman & Bro. | ..... | 4,000 |
| R. Crooks & Co. | ..... | 1,000 |
| Copper Matte: Williams & Terhune | ..... | 34,382,598 |
| Lewisohn Bros. | ..... | 3,021,610 |
| American Metal Company | 213,029 | 2,629,102 |
| J. Abbott & Co. | ..... | 295,000 |
| C. Ledoux & Co. | ..... | 485,800 |
| F. W. J. Hurst | ..... | 184,288 |
| G. H. Nichols | ..... | 722,777 |
| H. T. Nichols & Co. | ..... | 180,995 |
| Kunhardt & Co. | ..... | 41,652 |
| Old Copper: Burgass & Co. | 24,239 | 584,813 |

# Metal Market.

**Copper.**—London has been unsettled and lower, with spot Chili Bars, which gave way from £101 to £96 owing perhaps to the unfavorable statistics, the visible supply on October 1 being 89,154 tons in England and France, against 84,170 on September 1. Futures meanwhile rose from £77 to £79. 10/; good merchantable brands declined from £78. 5/ to £78. Best Selected is cabled £82 this morning. Here the shorts covered on Monday, November and December contracts at 17.70¢ @ 17.75¢; since then the market has become weak and unsettled at 17¢, bid for spot and October, and 17.30¢ November, with offerings at 17.75¢ @ 17.95¢. The closing prices at the Metal Exchange to-day were 17.10¢ bid, 17.90¢ asked. The consumptive demand for Copper is represented as being good, and the lowest at which the syndicate has been willing to sell is, we hear, 17.70¢. The following was telegraphed from Washington:

The Senate Committee on Finance to-day began the inquiry into the operations in this country of the French Copper syndicate. The witnesses examined were Charles H. Pine, of Ansonia, Conn., treasurer of the Parrot Silver and Copper Mining Company, of Montana; Charles Raht, of New York, a Copper broker, and John Stanton, of New York, treasurer of three lake Copper mining companies. It was explained by all the witnesses that the Société took all the surplus Copper produced in America and sold it abroad, paying the American companies one-half of the sum realized above 13¢ ℔, and making the deficit good when the price realized was less than 13¢, whether sold at home or abroad. The Société had the right at all times to fix the price of sale. The Société had contracts, witnesses understood, with practically all the mines in the country. The Société had not a monopoly of Copper manufacture in France, although it controlled many mills. No Copper had been imported into this country for several years. All the witnesses agreed that but for the protection afforded by the tariff originally neither the mines of Lake Superior, Arizona nor Montana would or could have been developed. The protection afforded by the tariff had made the United States the largest Copper producing country in the world. A few years ago—in 1883 and 1884—the English market controlled the prices of Copper, and English speculators so manipulated the market as to run the price down below the point where American mines could be worked with profit. It was at this juncture that the Société began its operations and it had increased the price of Copper to a paying basis.

The import into Liverpool and South Wales from January 1 to September 17 of American Copper has been 18,991 tons, as compared with 7881 tons same time last year.

**Tin.**—This metal has been ill sustained in the London market, declining as it did from £103. 17/6 to £101. 15/, spot, and from £102. 17/6 to £101. 15/; total sales, 260 tons. The visible supply is reduced but little, being on October 1 12,451 tons, against 12,740 on September 1 and 11,907 on October 1, 1887. Here the available supply is light, hence the spot figure is sustained at 23.55¢, but in a speculative way the tendency has been downward, the dealings summing up about 100 tons, October selling from 23.10¢ down to 22.85¢, 22.65¢ being bid for November, but 23.10¢ @ 23.25¢ asked. From January 1 to August 16, the latter inclusive, the Straits Settlements shipped to the United States 19,348 piculs of Tin. At the Metal Exchange 10 tons prompt shipment still brought 22.95¢ and 10 tons November the same figure. The closing price to-day was 23.90¢ asked. *Tin Plates.*—The demand has been rather quiet for the past week, partly accounted for by the fruit-packing season being about over. Prices are a shade easier on the spot. The inquiry for futures has fallen off somewhat. The quotation at Liverpool still continues at 14/ for Cokes, but it is being shaded in actual business. We quote at the close, large lines, ℔ box: Siemens-Martin Steel, Charcoal finish, $5.25 @ $5.75; Coke finish, $4.70; Ternes, $4.30 @ $4.40; Bessemer Cokes, $4.60 @ $4.62½, and Wasters, $4.30.

**Lead.**—Since our last week's report 1094 tons were sold on the Metal Exchange, October from 5.05¢ to 5.10¢, and even 5.12½¢, closing at 5.10¢, and November at 4.95¢, the market being rather unsettled; still the spot price to-day is 5.12½¢. The closing price at the Metal Exchange to-day is 5.02½¢ bid, 5.10¢ asked. Consumers did little or nothing. There have been rumors of a revival of the Corroders pool, and the thing seems to be in a fair way toward accomplishment. In London, meanwhile, Soft Spanish dropped from £14. 17/6 to £14. 15/, while English Pig is cabled 15/.

**Spelter.**—The market here has become a little livelier; under 5¼¢ no Domestic Spelter can be had; Silesian cannot be laid down here for less than 6¢, as it has improved to £19. 2/6 in London. The Vieille Montague Company have raised the price for Sheet Zinc 2 francs ℔ 100 kg.

**Antimony.**—Hallett advanced to £42 in London; we quote the same 10½¢ here and Cookson 12¾¢. There is a fair jobbing demand and the market is steady.

**New York Metal Exchange.**

The following sales are reported:

FRIDAY, September 28.

| | |
|---|---|
| 200 tons Lead, October | 5.05¢ |

SATURDAY, September 29.

| | |
|---|---|
| 100 tons Lead, spot | 5.05¢ |
| 16 tons Lead, spot | 5.07½¢ |
| 100 tons Lead, October | 5.12½¢ |

MONDAY, October 1.

| | |
|---|---|
| 550 tons Lead, October | 5.12½¢ |
| 80 tons Lead, November | 4.95¢ |
| 35 tons Tin, spot | 23.40¢ |
| 10 tons Tin, November | 23.10¢ |
| 50,000 lbs. Lake Copper, November | 17.70¢ |
| 25,000 lbs. Lake Copper, December | 17.75¢ |

TUESDAY, October 2.

| | |
|---|---|
| 10 tons Tin, October | 22.95¢ |
| 20 tons Tin, October | 22.85¢ |
| 10 tons Tin, October | 22.90¢ |
| 48 tons Lead, October | 5.10¢ |

WEDNESDAY, October 3.

| | |
|---|---|
| 360 tons Lead, October | 5.05¢ |
| 65 tons Lead, October | 5.02½¢ |

# British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, Oct. 3, 1888.

Information comes from a trustworthy source that late negotiations between M. Secrétan as representative of the so-called "syndicate" and the several copper mining companies for an extension of existing contracts have resulted favorably. It is stated, in fact, that contracts with the leading companies will be closed within the next ten days for their entire production for a period of nine years at £72 per ton. A certain amount of the profits over and above that price will be shared with the various companies, according to the proportion of their output. The production will be restricted, but as yet particulars do not come to the surface on this important point. The announcement is reflected in a hardening tendency to the market for Chili Bar futures, and of prices for outside brands, the latter showing 25/ rise, with the tendency still upward. Furnace material is also higher and in active demand, mainly from smelters. James Lewis & Son report sales of 2000 tons Anaconda Matte at 15/3 ℔ unit and 500 ditto at 15/4½ ℔ unit. Sellers now ask 15/6, an advance of 6d the past few weeks. The business in spot Chili Bars the past week has been confined mainly to closing out old contracts, and, as purchases to cover short sales were smaller than they have been heretofore, prices show some decline.

The Block-Tin market has received a very fair measure of support during the week from purchases reported to be for American account. From other sources the demand has been moderate. American orders have dropped off somewhat the past few days, however, and prices have weakened a little in consequence and there has been limited trading. There is no material change in the market from the statistical standpoint.

In the Tin Plate market the situation is practically the same as it was a week ago. There is considerable inquiry, but buyers and sellers are wide apart on prices in negotiations involving large lots, and transactions are therefore of moderate volume.

Prices for Pig-Iron "warrants" generally have averaged somewhat lower, consequent upon more or less disposition to realize profits and more agressive methods pursued by "bear" operators. The home demand for consumption continues active, however, as does also

he export trade, and this, coupledt with the lively trade in Finished Iron and Steel, acts as an offset to "bear" operations in the "warrant" market. However, maker's brands of Scotch are 6d. to 1/6 off, and Hematites have sold from second hands at 1/6 decline. Spiegeleisen is a shade higher and very firm. Steel Rails have dropped over 5/ under sharp competition; but Billets and Slabs, on the other hand, are held at a slight advance.

There has been a livelier demand for Old Iron Rails, and bids are reported that come very near to holders' figures. The drift of the American market is watched with considerable interest. The endurance of the strength reported there and the outcome of the present demand will be largely instrumental in shaping this narket. At the present time £3. 2/6 for Flanges and £3. 5/ for Double-Heads, f.o.b., are apparently sellers' lowest figures.

**Scotch Pig.**—Business fairly active, but prices affected by the decline on warrants.

| | | | |
|---|---|---|---|
| No. 1 Coltness, | f.o.b. | Glasgow | 50/6 |
| No. 1 Summerlee, | " | " | 52/ |
| No. 1 Gartsherrie, | " | " | 46/6 |
| No. 1 Langloan, | " | " | 49/6 |
| No. 1 Carnbroe, | " | " | 43/6 |
| No. 1 Shotts, | " | at Leith | 48/6 |
| No. 1 Glengarnock, | " | Ardrossan | 46/6 |
| No. 1 Dalmellington, | " | " | 43/ |
| No. 1 Eglinton, | " | " | 42/ |

Steamer freights, Glasgow to New York, 10/ Liverpool to New York, 10/.

**Cleveland Pig.**—The demand has slackened somewhat and prices are not so firm. No. 1 Middlesboro', G.M.B., 37/; No. 3 do., 34/6.

**Bessemer Pig.**—Prices have weakened under pressure to sell at second hands. Business liberal at the decline. West Coast brands, mixed numbers, 44/6, f.o.b. shipping point.

**Spiegeleisen.**—Offerings are moderate, and higher prices are asked. English 20 % quoted 78/6, f.o.b. N. W. England shipping point.

**Steel Rails.**—There has been a fair business at somewhat lower prices. Standard sections quoted at £3. 16/3 @ £3. 17/6, f.o.b. at N. W. England shipping point.

**Steel Blooms.**—The market fairly active, and prices very firm. We quote £4 @ £4. 1/3 for 7 x 7, f.o.b. at N. W. England shipping point.

**Steel Billets.**—Demand continues brisk and prices are firm. Bessemer, 2½ x 2½ inch, £4. 1/3, @ £4. 2/6, f.o.b. at N. W. England shipping point.

**Steel Wire Rods.**—Business moderate and prices unchanged. Mild Steel No. 6 quoted at £5. 18/6 and No. 5 at £5. 17/6, f.o.b. at N. W. England shipping point.

**Steel Slabs.**—Very little demand, but offerings moderate and prices firm. Bessemer, £4 @ £4. 1/3, f.o.b. at N. W. England shipping point.

**Old Rails.**—Transactions moderate, but holders very firm. Tees held at £3. 2/6, and Double Heads £3. 5/, f.o.b.

**Scrap Iron.**—Demand very slow and prices weaker. Heavy Wrought quoted at £2. 5/, f.o.b.

**Crop Ends.**—The market quiet, but very steady. Bessemer quoted £2. 7/6 @ £2. 10/, f.o.b.

**Manufactured Iron.**—There is still a good business, and prices remain very firm. We quote, f.o.b. Liverpool:

| | £ | s. | d. | | £ | s. | d. |
|---|---|---|---|---|---|---|---|
| Staff. Ord. Marked Bars.... | .... | | | @ | 7 | 12 | 6 |
| " Common " .... | ... | | | @ | 5 | 2 | 6 |
| Staff. Bl'k Sheet, singles ..... | | | | @ | 5 | 2 | 0 |
| Welsh Bars (f.o.b. Wales)... .... | | | | @ | 4 | 17 | 6 |

**Tin Plate.**—Demand is quite active, and moderate sales have been made at higher prices. We quote, f.o.b. Liverpool:

| | |
|---|---|
| IC Charcoal, Allaway grade | 15/6 @ 16/ |
| IC Bessemer steel, Coke finish | 14/3 @ 14/6 |
| IC Siemens " " " | 14/6 @ 14/9 |
| IC Coke, B. V. grade | 14/ @ 14/3 |
| Charcoal Terne, Dean grade | 12/6 @ 13/ |

**Tin.**—Very little change is apparent in the situation. Straits quoted at £101. 15/ @ £102, spot, and £102 for three months' futures.

**Copper.**—Future Chili Bars and Best Selected very firm, with fairly good demand. Chili Bars, £96 @ £98, spot, and £79. 10/ three months' futures. Best Selected, £81. 10/.

**Lead.**—The market has continued strong, with demand good. Soft Spanish, £14. 17/6 @ £15.

**Spelter.**—The market firm and fairly active. Silesian, ordinary, £18. 17/6 @ £19.

# Foreign Markets.

EQUIVALENTS

| | Cents. |
|---|---|
| Franc, Peseta or Lira | 19.3 |
| Florin (Netherlands) | 40.2 |
| Florin (Austria) | 35.9 |
| Milreis (Portugal) | $1.08. |
| Milreis (Brazil) | 54.6 |
| Mark (Germany) | 23.8 |
| | Pounds. |
| Kilogram | 2.205 |
| Picul | 134. |

## WEST INDIES.

PORT OF SPAIN, TRINIDAD, August 31, 1888.—*Asphaltum.*—Our market has been moderately active and steady at $14.4 ₱ ton for Boiled and $6.84 for Crude, f.o.b., export duty included. Shipments during the first eight months amounted to 37,891 tons, against 29,578 tons last year, and 22,614 tons in 1886. *Exchange*, 90 days' sight on London $4.86 @ $4.88.—*E. P. Masson.*

## CHILI.

VALPARAISO, August 3, 1888.—*Copper.*—Although cable advices from England have been favorable enough, the volume of dealings has remained restricted for the lack of copper offering for sale, nearly all that can be shipped before the end of next month being disposed of. Sales figure up 10,742 quintals all told at $29,45 @ $30; the price of $29.65 equals £75. 5/6, with 26/6 steam freight. *Nitrate.*—There has been a revival in the demand, but not much has transpired in the way of sales, because of the extreme stiffness exhibited by holders. Sales aggregate for the fortnight 220,000 quintals at $2.70 @ $2.80; the price of $2.75 for 95 % equals 8/4¾, with 27/6 freight and 26⅜ d. exchange. Futures, September to November, are worth $2.72½ @ $2.77½. July shipments to Europe have been 37,000 tons, and to the United States 2500; loading 1st inst., 85,000 and 6000 tons respectively, chartered in July for Europe 39,800 tons, and for the United States 3200. *Coal*—Continues drooping, Newcastle being offered at 40/ and June shipments having been paid 35/. *Exchange*, 90 days' bank, 26⅛d.—*Weber & Co*

## EAST INDIES.

SINGAPORE, August 8, 1888.—Our last report was dated 25th ult. *Tin.*—The sales have amounted to 300 tons, and supplies are coming in more freely; we close with buyers at $35 and sellers at $35.25. Shipments this month will probably exceed 1500 tons. *Gum Copal.*—There is hardly any demand and stocks are large. *Gum Damar.*—No transactions. *Tonnage.*—London rates are steady at 25/ @ 30/ for weight and 36/6 @ 40/ for light stuff. New York via canal, there is no tonnage offering. Via cape, the Tabique and Maccabeo are loading and the Sonntag has been fixed to arrive at 25/ for weight and 30/ for light stuff. *Exchange* is steady at 3/1¼ for six months' sight credits. Total Tin shipments from the Straits Settlements to the United States during the first seven months have been as follows: 16,520 piculs, against 46,858 in 1887, 40,706 in 1886, 16,471 in 1885, 37,408 in 1884 and 67,119 in 1883.—*Gilfillan, Wood & Co.*

PENANG, August 17, 1888.—*Tin.*—The market opened a fortnight ago at $34.15 ₱ picul in order to improve to $37.10 subsequently, and finally wound up at $35.90. Receipts for the two weeks have been 10,000 piculs, of which Europeans took 3700 and Chinese 6300. *Exchange*, 4 months' bank, 3/1.—*Schmidt, Kustermann & Co.*

MANILA, September 24, 1888.—*Hemp.*—There are buyers at $9.87½ ₱ picul, against $10.50 same time last year, the former figure equaling per ton, cost and freight, £32. 17/6, and the latter £37 5/. There have cleared for the United States since last cable 12,000 bales, against 4000, and since January 1st, 137,000, against 154,000. There are still loading for the same destination 36,000 bales, against 55,000. The clearances for Great Britain since January 1st have been 252,000 bales, against 157,000 last year, and there remain loading 13,000, against none. There were cleared for all other ports 55,000, against 30,000, whereas receipts from all ports since last cable amounted to 18,000, against 13,000 bales, and since January 1st they have been 457,000 bales, against 367,000 last year, and 294,000 in 1886. *Freight*, $6, against $5.50 in 1887. *Exchange*, six months' sight, 3/5¼, against 3/ 8¾ last year.—*Ker & Co. to Charles Nordhaus, 89 Water street, New York, per cable direct.*

BOMBAY, August 15, 1888.—*Petroleum.*—There have been sold in this market during the fiscal year from June 1st, 1887, to June 1st, 1888, 870,000 boxes of refined Petroleum of 10 gallons each; 320,000 came from America, and 550,000 from Russia, both 125° Government test, each box containing two tins of 5 gallons each. The American oil brought on an average 3.70 rupees per box; the Russian, 3.50, there being but a slight difference in the quality. Russian has been well introduced, is popular, and seems to have a good future before it. Sunflake American of 150° can be placed to a moderate extent at a higher figure, but the bulk of consumption runs on American and Russian of 125°.—*Times of India.*

## GERMANY.

HAMBURG, September 22, 1888.—*Pig Iron.*—There has not been much of a change except so far as Spiegel is concerned, for which at a reduction in price to 53 marks for 10 to 12 % large American orders have been filled. The remaining sorts have been neglected, with the exception of Thomas. The general demand for Forged Pig is rather slack. Luxembourg has nevertheless remained steady; Finished Iron has been slightly looking up latterly, the domestic inquiry increasing a little, and to some extent it is also moving off more readily for export. Orders received are all to the close of the year. The lowest figure for Rod Iron at a recent adjudication at Cologne was 115 marks, and the highest 128. Beams are selling as largely as ever; Hoop Iron has undergone no change. Without exception the works turning out boiler plates are as fully engaged as ever at firm prices; thin sheets still lag behind. The Wire branch reports no particular change except that there is for the time being less fear of the syndicate dissolving. A continued good trade is reported by foundries, machine shops and car works. The latest adjudication of Steel Rails that came off in Baden showed the lowest figure to be 120.50 marks ₱ ton delivered at Mannheim. We quote at the close Bessemer Steel Billets 135 marks and Steel Rail for mines 115. During the first nine months the export of Finished Iron from Germany has been only 101,940 tons as compared with 199,902 same time last year, and of Hardware, &c., 482,277, against 541,489—together 582,217, against 941,391 last year. The import was as follows: Finished Iron this year 116,320, against 82,258 last year, and of Hardware 20,020, against 28,358—together 142,340, against 112,616. *Metals.*—Lead continues rising, and Copper and Spelter are both firm. International Lead Sydicate negotiations proceed successfully; Mechernich and the Commern Union will be largely benefited should the matter be clinched.—*Borsenhalle.*

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Alex. Laughlin & Co., engineers and contractors, of Cleveland, Ohio, report, under date of October 1, that they have contracted with the Ohio Iron Company, Zanesville, Ohio, to erect, equip and place in operation at their works one regenerative gas furnace, with working hearth 7 x 18 feet, together with the artificial gas producers necessary to operate the same. They have also closed contract with the Lake Erie Iron Company, of Cleveland, Ohio, to erect a furnace, with working hearth 7 x 14 feet, for heating iron for their 9-inch train; and have just completed two furnaces for the Knoxville Iron Company, Knoxville, Tenn., and two for the Belfont Iron Works Company, Ironton, Ohio, which are working in a very satisfactory manner.

# Hardware.

During the past week there have been comparatively few changes in price, and the volume of business about as at our last report. Orders are coming in freely and indicate a good condition of general business. Manufacturers in some lines are behind their orders and seasonable goods especially are in excellent demand.

## Cut Nails.

The New York market has not improved so far as prices for Iron Nails are concerned, low sellers cropping up periodically. In Steel Nails the situation is somewhat different. For some time, until lately, any differences in price between the two materials had practically disappeared. Now they are again being insisted upon by some, manufacturers of Steel Nails declining to meet the low prices on Iron Nails. We quote $1.85 @ $1.90 for carload lots of Iron Nails.

## Barb Wire.

The New York Barb-Wire market continues steady, with about the same conditions as were alluded to in last week's report. The present price in New York for carload lots may be quoted as 3.6 cents for four point Galvanized, small lots being sold at 3.8 to 3.87½ cents. Manufacturers are evincing a conservative disposition in regard to booking orders for future delivery.

## Miscellaneous Prices.

The price of goods in which Copper enters largely remains generally without change, it not being found feasible to advance the quotations in accordance with the advance in the raw material. Some manufacturers also have had large stocks of Copper, which have enabled them to produce the goods without the increased expense of the metal at prices now ruling. Referring to this feature of the market a well-known manufacturer writes:

We have found the same demand for our goods this year as we did last. The Presidential election does not seem to affect our trade. The only serious trouble this year is the advance in the price of Copper which has been brought about by the Copper syndicate. With the competition we have it is impossible to get the advanced price for our goods to correspond with the advance in Copper. It is not very pleasant to know that the great industries of our country are held down by the throat by a few French-Jew bankers in France, who have control of the metal that is of so much importance to the interests of our country.

The Grand Crossing Tack Company, Grand Crossing, Ill., have issued what they designate as a net price list, which is of interest, especially as it indicates their method of putting up Tacks. In this pamphlet the regular Tack list is dispensed with and net prices are named on the goods, which also in some lines are put up in new ways. For example, the first page of the list is occupied with prices on Copper Plated, Tinned, Silver Steel and Blued Steel Carpet Tacks, prices being given on the Tacks with 75, 100, 150, 200 and 250 Tacks in a paper. As illustrating their method, we reproduce below their quotations on

*Blued Steel Carpet Tacks.*

| 75 Tacks in a paper. | | 100 Tacks in a paper. | 150 Tacks in a paper. | 200 Tacks in a paper. | 250 Tacks in a paper. |
|---|---|---|---|---|---|
| oz. | per doz | per doz | per doz | per doz | per doz |
| 6 | $0.06½ | $0.07 | $0.13 | $0.13¾ | $0.16¾ |
| 8 | .07¼ | .08 | .14½ | .15 | .18¾ |
| 10 | .08¾ | .09½ | .16¾ | .17⅜ | .21¼ |
| 12 | .09½ | .10¾ | .19 | .2⅜¼ | .24¼ |
| 14 | .10¾ | .12¼ | .21½ | .23 | .27 |
| 16 | .12 | .13¾ | .24 | .26 | .29½ |

The company also explain their method of putting up Carpet Tacks in cases containing a wide variety of assortments, both as to the number of Tacks in a pasteboard box and the number and assortment of boxes in a case. For example, the cases contain 100, half gross or one gross, of boxes, which in turn contain, as above, 75, 100, 150, 200 and 250 Tacks, either Silver Steel, Tinned Steel, Copper Plated or Blued Steel. As illustrating this method of putting up the goods, and the assortments, we give below the prices of cases containing 100 papers with 100 Tacks in each:

Silver Steel.

| | | Per Case. |
|---|---|---|
| [1001] | 6 8 10 oz. / 30 40 30 bxs | $0.71 |
| [1002] | 6 8 10 oz. / 20 50 30 bxs | .72 |
| [1003] | 8 10 oz. / 60 40 bxs | .75 |
| [1004] | 8 10 12 oz. / 30 40 30 bxs | .81 |
| [1005] | 8 10 oz. / 50 50 bxs | .76 |
| [1006] | 6 8 10 12 oz. / 15 40 30 15 bxs | .75 |

Blued Steel.

Same Price as Silver Steel.

Tinned Steel.

| | | Per Case. |
|---|---|---|
| [1101] | 6 8 10 oz. / 30 40 30 bxs | $0.83 |
| [1102] | 6 8 10 oz. / 20 50 30 bxs | .84 |
| [1103] | 8 10 oz. / 60 40 bxs | .87 |
| [1104] | 8 10 12 oz. / 30 40 30 bxs | .94 |
| [1105] | 8 10 oz. / 50 50 bxs | .89 |
| [1106] | 6 8 10 12 oz. / 15 40 30 15 bxs | .87 |

Assorted Cut Tacks and other goods are put up similarly. Prices are also given on the other goods in the varied line made by the company.

Chas. A. Bowen & Co., Sterling, Ohio, issue a circular relating to Taft's Vise Wrench, in which they illustrate its special features and allude to its advantages. It is quoted at a discount of 50 and 10 per cent. from the regular list.

Sterling Wrench Company, Sterling, Ohio, alluding to their additions to their manufacturing facilities, make the following quotations on Wrenches of their manufacture:

| | Discount. |
|---|---|
| No. 1, Machinists' | 70&10 |
| No. 2, Agricultural | 80&5 |

A slight decline has taken place in both Manila and Sisal Rope, the prices of which have fallen off ¼ to ⅝ cent per pound. This is owing to competition between the different markets, and the price is regarded now as more settled.

The prices agreed upon by the manufacturers of Sheet Copper, &c., have for some time been well maintained, but there are indications of slight concessions, as some new competition is entering the market.

An advance has been made in the price of Emery Wheels, by which the general discount on 1 inch and larger has been fixed at 55 per cent, and on smaller than 1 inch at 45 per cent., subject to a discount of 2 per cent. for cash.

The price of the Standard Apple Parer, made by the Henry C. Hart Mfg. Company, Detroit, Mich., is $9 per dozen, with a discount of 50 and 10 per cent.

In the Ammunition market the irregularities to which we have heretofore referred continue without abatement and with some increase. A large business is being done by the manufacturers and dealers at regular prices, but goods continue to be offered by houses who are not in contract with the association at cut prices, and it appears that such houses are enabled to procure the goods required for their trade with less difficulty than earlier in the season. The extent to which such irregularities are carried is regarded by many as indicating an indisposition on the part of the association to prevent them, growing probably out of a conviction on their part that it would not be feasible to do so. The present system, which has for a long time served a good purpose in securing a general maintenance of prices, has apparently ceased to meet the existing conditions, and it would not be surprising if some new arrangement were found necessary to accomplish the desired results.

## Obituary.

In the recent death of Augustus Stanley, New Britain, Conn., another veteran manufacturer has been removed from that busy city. His connection with the manufacture of Rules commenced in 1854 as senior partner of the firm of A. Santley & Co. In 1857 the business of this firm was consolidated with others in the organization of the Stanley Rule and Level Company. Mr. Stanley has been one of the directors of the company since its incorporation, and, until recently, was actively identified with its manufacturing interests. His loss is sincerely mourned in the community where he spent his whole life and was best known.

Charles B. Tatham, who died on Thursday, September 6, at his residence, 276 De Kalb avenue, Brooklyn, was born at Elwood, near Philadelphia, in 1811. In 1838 he came to this city, and together with Benjamin Tatham, a brother, established the house of Tatham Brothers, engaging in the manufacture of lead. This house carried on the business in conjunction with a Philadelphia house, conducted by the three brothers, Henry B., William P., and George N. Tatham. Some years ago the house moved from Water street to its present place, 82 Beekman street. Mr. Tatham was ill about a week, dying at the age of 77. He leaves a widow and one son.

The death of N. Murphy, of the firm of N. Murphy & Son, Erie, Pa., is announced. Hereafter the business will be carried on by H. H. Murphy and Fred. Murphy under the firm name of Murphy Bros.

## Trade.

From our Louisville correspondent we have, under date September 29, the following advices in regard to that market:

For the past week the Hardware trade of Louisville, Ky., has been quite up to promise, and the last few days were brightened by a few orders coming voluntarily from the section of the South afflicted with yellow fever. Business has undoubtedly been seriously affected by the scare, but is satisfactorily righting itself into a more natural state.

Consumers and country merchants in the infected districts are beginning to realize that they will need quite as much, or even more goods than usual, on account of the abundant crops, which in turn give heavy tonnage to the railroads, and when they prosper Iron, the index to trade, receives an impetus that benefits all lines. Bar Iron is held firmly by the mills, giving the dealers opportunities to advance on their late low prices, and sells readily at $1.75 from store for common. Some mills are feeling the market for another advance. The dealers, though, deprecate such action, and would prefer to see prices remain steady. Sheet Iron is scarce from the mills; those usually supplying this market are not able to take any new orders, and are very backward in filling the ones already booked.

Cut Nails are also firm, dealers' large stocks going off readily. Jobbers should get more for them than they do, this stock being used by many as simply a leader to sell other goods. Wire Nails are in fair demand from store. Very few mills show any desire to take orders at less than price adopted at last meeting of the association.

Barbed Wire is quiet, but firm. The mills being satisfactorily fixed on contracts, and raw material higher, there are no inducements to shade prices. The jobbers' trade is fair, Wire selling from store at full figures.

## Items.

It will be seen in the special announcement on page 82, that the Palmer Hardware Mfg. Co., Troy, N. Y., have discon-

tinued infringement suits against the Empire Portable Forge Company, Cohoes, N. Y., to whom a license has been granted for the manufacture of the goods in question.

The Gibbs Lawn Rake Company, of Canton, Ohio, will hereafter be represented in Chicago by J. E. Davis & Co., 115 Dearborn street, in place of Hiram Sibley & Co. A speciality of the company to which they call particular attention is the Gibbs Post-hole Digger, which they refer to as meeting with much favor and increasing sales.

Hibbard, Spencer, Bartlett & Co., of Chicago, are building up a large trade in Lamps, the assortment they offer enabling them to supply a complete line for every use. Their orders recently received cover almost every part of the West, extending up into British Columbia.

It is reported that the Russians are complaining of the falsification of trade-marks and imitation of foreign manufactures by the Germans. According to a paper read before the Panslavist Society for the Promotion of Industry and Trade, Germany is said to be filling the Russian markets with her home-made English, French, Belgian, and American manufactures. And these goods, notwithstanding their inferior quality, find ready purchasers. According to M. Pobudoff, the reader of the paper, real English Plows and American Sewing Machines are all but unknown in Russia, the German imitations supplying their places.

The Calumet Iron and Steel Company, Chicago, Ill., whose Parallel Sided Chisel Pointed Steel Nail was illustrated in our last issue, call the attention of the trade to the merits possessed by it and the advantage with which it may be handled by the Hardware trade. They state that with the view of introducing these Nails they will send sample lots of five kegs or more, and, on receipt of specifications, will quote bottom prices. The manner in which they call attention to it is shown in their advertisement.

The Rogers & Hamilton Company, Waterbury, Conn., issue a circular relating to the Rogers & Hamilton Combination Set, No. 32. The Knives are described as made from crucible steel plated 14 dwts., and after plating hand burnished, making them especially durable. The Forks are made from nickeled silver, and are plated by their sectional plating process, which is illustrated in their advertisement on page 102.

The Samuel Winslow Skate Mfg. Company, Worcester, Mass., issue a neat catalogue of Ice Skates for the season 1888–89. It represents a varied line, of which illustrations are given, with list prices. Extra parts are also represented, with price list.

The Merriam Mfg. Company, Durham, Conn., announce that they have purchased the Mosler Index Combination Lock and that the Yale Lock Mfg. Company have improved the same by substituting a revolving dial for the pointer heretofore used thereon. It will hereafter be known as the Yale Dial Lock, and its exclusive use, as applied to tin boxes, is retained by the Merriam Mfg. Company, the Yale & Towne Mfg. Company having modifications of this Lock adapted for use on drawers, desks, tills, &c. The internal parts of the Lock are referred to as remaining unchanged and the advantages of the new revolving dial pointed out.

The excellent illustration of Stanley's Roofing Brackets, on the inside page of our cover, will show how these articles can be utilized for campaign purposes—sitting out on the roof to see the procession, &c. —but they will interest mechanics more for their permanent uses in providing a secure and rapid means of placing staggings, for shingling or painting roofs.

Merrie, Verhage & Co., 11 West Seventh street, Cincinnati, Ohio, favor us with their handsome illustrated catalogue and price list of Plumbing, Steam and Gas Goods. The catalogue is a substantial and well-gotten up cloth-bound book some 11 x 7 inches in size, and contains over 300 pages. Running over it, we notice that the first 80 pages are filled with illustrations, general and sectional, of an extensive variety of Stops, Cocks and Bibs. The engravings are well executed, and accompanying the illustrations are lists giving prices of the different sizes. Miscellaneous Fittings, Couplings, Ferrules, &c., are next taken up, after which considerable space is devoted to Bathtubs, Range Boilers, Sinks, Washtubs, Urinals, Washstands, Water-Closets and Supply-Cisterns. A number of pages are devoted to Lift and Force Pumps, with their various attachments, and lists are given of a variety of sizes of Steam Radiators, the Eclipse Radiator occupying a prominent part. Some 50 pages are filled with illustrations and list of Iron Fittings, followed by an extensive variety of Valves, including several Steam Goods Specialties. The volume closes with Plumbers' Furnaces, Gas Pliers, Pipe-Cutters, Vises and other steam-fitters' tools. Reference to the contents of the volume is facilitated by a complete alphabetical index in the front of the book. The catalogue, which has just been issued from the press, is found of great service to plumbers, steam fitters and all who are interested in similar work.

## Trade-Mark Decision.

The following extract is from the decision of Judge Holmes granting an injunction against the Le Page Glue and Cement Company, to which reference was made in our last issue. An injunction was ordered:

Restraining the defendant from the use of the words "Le Page's Glue" or "W. N. Le Page's Glue" on parcels or bottles or cans of Liquid Glue, or from using the name of the defendant corporation on parcels or bottles or cans of Liquid Glue, or from advertising in the name of the defendant corporation as manufacturing or selling Liquid Glue (but without prejudice to the right of said corporation to buy or sell Liquid Glue or make out bills therefor in its own name) or from in any manner representing, or causing or procuring to be represented, that the defendant corporation has been or is carrying on the business formerly carried on by Rueben Brooks and W. N. Le Page as copartners, or by the Russia Cement Company, or is the successor in business of either the said copartnership or the said company, or that the goods manufactured by the defendant company are the goods of the said Brooks and Le Page copartners, or of the Russia Cement Company, without prejudice to the right of the defendant to use certain new labels of which samples have been exhibited to the court and counsel for the complainant and are to be filed in the case.

The new labels state the fact that the Le Page Company are the manufacturers of the Glue to which the labels are applied, but do not designate it as Le Page's Glue, that being the name by which the Russia Cement Company's article has been known and to which the Court decides they have the exclusive right.

## Exports.

We give below abstracts from recent manifests showing the exports in Hardware and related lines which have recently been made to Austrialia and South Africa:

PER BARK GEFION, SEPTEMBER 21, FOR PORT ELIZABETH, AFRICA.

*By W. H. Crossman & Bro.*—40 dozen Handles, 1 case Hardware, 1800 pounds Sash Weights, 52 pounds Cord, 90 dozen Axes, 158 dozen Hatchets, 12 dozen Hammers, 30 dozen Shovels, 5½ dozen Sledges, 4 dozen Picks, 3 dozen Meat Cutters, 25 Scales, 2 packages Pumps, 119 cases Plow parts, 102 dozen Hatchets, 5783 pounds Sisal Rope.

*By Strong & Trowbridge.*—1500 Handles, 30 cases Clothes Pins.

*By H. W. Peabody & Co.*—20 cases Agricultural Implements.

*By Knauth, Nachod & Kuhne.*—3 cases Plow Castings, 50 pairs Plow Handles.

*By Corner Bros. & Co.*—8 dozen Tools, 22 cases Agricultural Implements.

*By Coombs, Crosby & Eddy.*—16 Plows, 6 Corn Shellers.

*By J. Norton & Sons.*—3600 pairs Staves, 1 Carriage, 12 dozen Slates, 124½ dozen Cocks, 5 cases Castings.

*By Arkell & Douglas.*—88 pounds Sash Cord, 1500 pounds Agricultural Implements, 66 pounds Sash Cord, 4 dozen Lifts, 100 pounds Sash Cord, 35 pounds Sash Cord, 2⅝ dozen Blocks, 16 Picks, 4 dozen Axes, 1 dozen Pulleys, 30 dozen Brooms, 600 feet Hose, ⅙ gross Fruit Jars, 3 dozen Scales, 20 Pumps, 32 dozen Handles, 9 dozen Lampware, ½ dozen Oil Stoves, 1 dozen Traps, 1 Lawn Mower, 1 dozen Traps, ½ dozen Bows, 8 Agricultural Implements, 6 dozen Saws, 4000 Cartridges, 167 pounds Hardware, ½ dozen Barrows, 6 gross Screw Nails, 2 dozen Locks, 5 pounds Oil Stoves, 3¼ dozen Lampware, 2 dozen Traps, 128 pounds Sandpaper, 1½ gross fruit Jars, 1 dozen Faucets, 1½ dozen Saws, ½ dozen Meat Choppers, 8 dozen Picks, 1½ dozen Braces, ½ dozen Sausage Stuffers, 40 Agricultural Implements, 1-6 dozen Pumps, 25 dozen Brooms, 1 dozen Perambulators, 20 dozen Shovels, 20 dozen Axes, 1½ dozen Sausage Stuffers, 2755 pounds Agricultural Implements, 1-6 dozen Pumps, 60 dozen Axles, 2 dozen Wagons, 24 dozen Washboards, 24 dozen Axes, 16 dozen Hatchets, 80 kegs Nails, 60 dozen Handles, 20 dozen Picks, 16 dozen Racks, 200 Agricultural Implements, 14 cases Sash Weights.

PER BARK SULITELMA, SEPTEMBER 15, FOR SYDNEY, N. S. W.

*By Arnold, Cheney & Co.*—6 crates Washboards, 3 cases Axles, 1 case Hoes, 2 cases Wagons, 5 cases Hardware, 1 case Wheels, 4 cases Wheels, 103 cases handles, 1 case Wicks, 18 cases Carriageware, 3 cases Shovels, 3574 pounds Paint, 7 cases Wagons, 2 cases Brooms, 4 cases Axles, 29,000 pieces Roofing Slate, 12 cases Varnish, 6 cases Wheels, 4 cases Polish, 3 cases Saddlery, 1 Barrel Bells, 1 case Saddlery, 2 cases Blacking, 1 box Hardware, 4 Boxes Horse-Shoe Nails, 4 cases Brooms.

*By Ilsley, Doubleday & Co.*—15 gross Axle Grease, 6720 pounds Axle Grease, 10 gross Glass Cutters, 1½ gross Metal Toys, 20½ dozen Horse Brushes, 15 gross Axle Grease, 264 pounds Paints.

*By R. W. Forbes & Son.*—98 sets Harness, 24 cases Wagons, complete, 23 packages Hardware, 4 cases Plated Ware, 2 cases Letter Files, 15 Scales, 3 dozen Scales, 4 cases Agricultural implements, 1 dozen Oil Gates, 6 Horse Hoes, complete, 4 cases Fire Arms, 16 packages Agricultural implements, 49 cases Sewing Machines, 1 dozen Forks, 6 crates Machinery, 65,900 pieces Roofing Slate, 7 casks Glue.

*By F. B. Wheeler & Co.*—50 gross Wicks, 3 Organs, 66 sets Harness, 2 cases Hardware, 6 crates Woodware, 21 packages Stoves and Parts, 2 packages Plated Ware, 13 cases Clocks, 1 case Clocks, 26 dozen Whips, 84 dozen Handles, 100 boxes Clothes Pins.

*By R. W. Cameron & Co.*—200 pounds Brushes, 574 pieces Hardware, 40 crates Blacking, 1 case Machinery, 26 boxes Steel.

*By Coombs, Crosby & Eddy.*—49 dozen Saws, 6 dozen Lemon Squeezers, 3 dozen Wringers, 3 gross Woodware, 63 Pails, 1350 pounds Slate, 1 gross Graters, 24 dozen House-Furnishing Goods.

*By Strong & Trowbridge.*—5 cases Hardware, 1 case Forks, 1 case Miter Boxes, 4 cases Picks and Axes, 1 case Hammers, 1 case planes, 20 gross Guns, Tools and Cartridges, 1 box Hardware, 3 packages Corn Shellers.

*By H. W. Peabody & Co.*—5105 pounds Wire Rope, 10,039 pounds Fence Wire, 1 case Machinery, 47 Sewing Machines.

*By Mosbacher & Co.*—1100 pounds Shears.

*By A. Field & Co.*—2 gross Shade Rollers, 42 Stoves.

*By Winchester Repeating Arms Company.*—10 Guns, 40 sets Tools, 100,000 Primers, 3000 Shells, 84,000 Cartridges.

*By W. R. Freeman.*—1200 pounds Files and Saws, 4852 pounds Axes, 16 cases Axes.

*By A. S. Lascelles & Co.*—8 gross Mouse Traps, 2 gross Hardware, ½ dozen Brooms, 30 dozen Axes.

*By Healy & Earl.*—1 case Saws, 1 case Hardware, 3 cases Saw Mills, 1 case Planing Machines, 7 cases Woodworking Machinery.

*By P. D. Ackerman & Bro.*—300 pounds Plated Ware.

*By Peters & Calhoun Company.*—4 cases Saddlery.

*By H. A. Rogers.*—3 boxes Woodworking Machinery.
*By J. A. Ten Eyck.*—6 cases Wagon Springs.
*By Rogers, Smith & Co.*—7 packages Plated Ware.
*By Meriden Brittania Company.*—5 packages Plated Ware.
*By Ansonia Clock Company.*—43 boxes Clocks.
*By E. N. Welch Mfg. Company.*—45 boxes Clocks.
*By Barber & Co.*—2220 pounds Castings.
*By J. Mathews.*—250 pounds Nails, 308 pounds Hoop Iron.
*By Crane & McMahon.*—8 packages Carriage Ware.
*By Reed & Barton.*—26 packages Plated Ware.
*By V. Basanta.*—60 dozen Handles, 21 dozen Hoes, 33 dozen Axes, 24 Corn Shellers, 48 Stepladders, 24 Lawn Mowers, 200 Lamp Goods, 42 Velocipedes, 5 dozen Clocks, 700 dozen Handles, 80 Velocipedes, 5½ gross Fruit Jars.
*By McLean Bros. & Rigg.*—54 dozen Handles, 2 gross Vegetable Presses, 12 dozen Hammers, 3 dozen Roasters, 3 Churns, 41 Pistols, 30 dozen Rat Traps, 12 dozen Handles, 1 case Hardware, 4⅜ dozen Hammers, 81 dozen Wire Goods, 3 Rope Reels, 139 dozen Granite Ware, 6 dozen Saws, 1 dozen Fluters, 102 dozen Chimneys, 33 dozen Padlocks, 28 dozen Cow Bells, 4 cases Sporting Goods, 1½ dozen Well Wheels, 6 crates Bats, 50 dozen Illuminators, 123 dozen Hardware, 400 dozen Handles, 4½ dozen Braces, 18 sets Wheels.
*By Arkell & Douglas.*—2 dozen Jacks, 141 Axles, 5 dozen sets Axles, 13 dozen Horse Collars, 2 dozen Bench Screws, 17 dozen Hammers, 4 dozen Saws, 975 pounds Hardware, 3 dozen Lanterns, 30 dozen Guns, 45,000 Cartridges, 52 dozen Hatchets, 30 dozen Axes, 8 dozen Picks, 3 dozen Braces, 12 gross Whips, 40 dozen Shovels, 3 dozen Traps, 40 dozen Hammers, 2168 pounds Locks, 5 dozen Axes, 10 dozen Picks, 3 dozen Wrenches, 4 dozen Sad Irons, 254 dozen Handles, 2 dozen Braces, 12 dozen Shovels, 6 dozen Ranges, 4 dozen Stencils, ½ dozen Lawn Mowers, 17 dozen Latches, 22 dozen Wrenches, 315 dozen Lampware, 12 gross Chisel Handles, 71 sets Double Trees, 11 cases Carriage Ware.
*By W. H. Crossman & Bro.*—24 dozen Axes, 20 dozen Hatchets, 1 barrel Carpenters' Tools, 3 gross Shade Rollers, 1 dozen Air Guns, 1 dozen Sausage Stuffers, 3 gross Machine Oil, 1 dozen Corn Mills, 17 cases Hardware, 1 case Tools, 213 dozen Handles, 20 dozen Paint Brushes, 2 cases Hardware, 2 cases Tools, 2 gross Pencils, 1 case Sleeve Supporters and Carpenters' Tools, 10 gross Machine Oil, 5 dozen Wrenches, 3 dozen Axes, 40 dozen Hatchets, 7 packages Hardware, 1 dozen Meat Choppers, 2 cases Hardware, 4 packages Tools, 1 dozen Air Guns, 2 dozen Carpet Sweepers, 2 gross Egg Beaters, 48 dozen Axes, 12 dozen Hatches, 4 bundles Barrow Parts, 1 case Hardware, 2 gross Wood Spoons, 4 dozen Pails, ½ dozen Bowls, ½ dozen Guns, 3000 Cartridges, 1 case Carriage Drills, 7 cases Hardware, 3 gross Axle Grease, 1 case Tools, 1 case Hardware, 68 dozen Hatchets, 12 dozen Picks, 146 dozen Handles, 103 dozen Mouse Traps, 2 cases Tools, 1 case Hardware, 12 dozen Axles, 10 gross Machine Oil, 1 Lawn Mower, 2 cases Hardware, 1 case Tools, 147 pairs Roller Skates.

## Nason Mfg. Company,

71 Beekman street, New York, have issued, under date September 25, a discount sheet referring to their catalogue, April, 1886, with subsequent revisions. It thus gives prices on a large variety of goods in their line. The prices named on some of the leading goods are as follows:

| | Dis. per cent. |
|---|---|
| Lap Welded American Charcoal Iron Boiler Tubes | 50 |
| Wrought-Iron Pipe: | |
| On List prices as revised 23d March, 1887: | |
| Plain 1¼ inch and under, whole lengths | 55 |
| " 1½ in. and over, " " | 65 |
| Galvanized, 1¼ in. and under, whole lengths | 47½ |
| Galvanized, 1½ in. and over, whole lengths | 55 |
| When cut to order, advance 5% on discount, and labor cutting charged extra. | |
| Extra and Double Extra Heavy W. I. Pipe: | |
| Plain 1¼ in. and under, whole lengths | 50 |
| " 1½ in. and over, " " | 60 |
| When cut to order, advance 10% on discount, and cutting extra. | |
| Iron Hydraulic Pipe | Net |
| Heavy Drive Well Pump | Net |
| Light Galvanized Leader Pipe | 50 |
| Galvanized Adjustable Elbows | 10 |
| Spiral Riveted Pressure Pipe | 50 |
| Fittings for Spiral Riveted Pipe | 20 |
| Cast-Iron Drain, Water and Smoke Pipe | 60 |
| Cast-Iron Water and Gas Pipe | Market rates. |
| Lead Pipe, 6¼ cents per pound | Net |
| Cast-Iron Fittings | 70 |
| Bushings and Plugs | 75&10 |
| Cast-Iron Flanges | 70 |
| Branch Tees, Hook and Expansion Plates | 67½ |
| Malleable-Iron Bushings | 75&10 |
| Malleable-Iron Unions | 67½ |
| American Unions | 45 |
| Wrought-Iron Fittings: | |
| Quarter Bonds and Long Screws | 67½ |
| W. I. Couplings and Nipples, List Prices Revised on 20th January, 1887 | 67½ |
| Cock Wrenches | 60 |
| Gas-Pipe Hooks, Wrought Iron | Net |
| Ceiling and Floor Plates | 67½ |
| Blake's Adjustable Pipe Hangers | 50 |
| Malleable-Iron Fittings | 25 |
| Iron Stop Cocks, 65&10 %, with brass plugs | 60&10 |
| Foot Valves and Strainers: | |
| Iron Foot Valves and Strainers | 65&10 |
| Nason's Foot Valves and Strainers | 60 |
| Mushroom Strainers | 25 |
| Expansion Joints, Iron Body | 65 |
| Iron Body Valves, Brass Mounted: | |
| Standard Pattern | 65&10 |
| Heavy " | 50 |
| Brass Valves, Cocks, &c.: | |
| Valves, Standard Pattern | 60&10 |
| " Heavy " | 50 |
| Steam Cocks, Standard | 57½&10 |
| " " Heavy Pattern | 50&10 |
| Expansion Joints, Heavy Pattern | 50 |
| Air Cocks | 60&10 |
| Cylinder Cocks | 50&10 |
| Gauge Cocks | 55&10 |
| Gas Cocks and Soldering Fittings | 57½&10 |
| Quick Opening Elevator Valves | 50 |
| Water Gauges | 60&10 |
| Nason's Improved Water Columns | 15 |
| Steam Gauge Cocks | 55&10 |
| Radiator Valves and Cocks: | |
| Radiator Angle Valves | 60&10 |
| " Air Cocks | 60&10 |
| Jenkins' Radiator Angle Valves | 60 |
| Radiator Angle Valves with Spindle | 60 |
| Automatic Air Valves for Radiators: | |
| Breckenridge's patent | 30 |
| Davis' " | 25 |
| Oil Cups | 60&10 |
| Lubricators | 60&10 |
| Steam Whistles | 60&10 |
| Single Bell Chime Whistles | 10 |
| Chime Steam Whistles | 40 |
| Whistle Valves | 60 |
| Brass Fittings | 60&10 |
| Brass Bushings | 60&10 |
| Steam Bibbs and Stops | 50&10 |
| Steam Swing Joints | 50&10 |
| Swinging Check Valves: | |
| Improved Pattern | 35 |
| Van Wies' " | 35 |
| Patent Straightway Gate Valves: | |
| Haydenville Double Gate Valves | 40 |
| Ludlow Sliding Stop Valves | 35 |
| Peet Sliding Gate Valves | 40 |
| Jenkins' Straightway Gate Valves | 35 |
| Kennedy's Double Gate Valves | 55 |
| Eddy's " " " | 25 |
| Chapman's Gate Valves | 35 |
| Jenkins' Globe and Angle Valves | 60 |
| " Check Valves | 60 |
| Benton's Lubricators | 60 |
| Handy Drop Feed Lubricators | 30 |
| Nathan's Self-Acting Lubricators | 30 |
| Dreyfus' Self-Oilers | 15 |
| " Engine Cups | 15 |
| Pickering Governors | 30 |
| Regester's Ball Gauge Cocks | 50 |
| Steam Gauges | 40 |
| Nason's Ejectors or Siphon Pumps | 25 |
| Hancock's Inspirators | 33⅓ |
| Korting's Double Tube Injectors | 15 |
| Rue's Little Giant Injector | 30 |
| Return Bend or Box Coils | 50 |
| Ornamental Screens | 50 |
| Marble Tops | Net |
| Feed Water Heaters | 50 |
| Spiral Coils for Tanks | 40 |
| Heater Coils | 40 |
| Nason's Automatic Water Feeder | 50 |
| Double or Jacket Steam Kettles | 25 |
| Steam Dampers or Draft Regulators: | |
| For high pressure | 25 |
| Nason's low pressure, with Reservoir | 20 |
| Cheap Patterns | 35 |
| Brass Gas Fixture Fittings | 60 |
| Gas Fixture Brackets | 50 |
| Blunt's Universal Force Pumps | 25 |
| Cistern Pumps, Revolving Tops | 45 |
| Pitcher Spout Pumps | 55 |
| Anti-Freezing Well Pumps | 40 |
| Deep Well Pump Standard | 40 |
| Force Pump on Base | 40 |
| Double Acting Force Pumps | 35 |
| Hydraulic Rams | 25 |
| Anti-Freezing Hydrant | 50 |
| Street Washers | 50 |
| Drive Well Points | 50 |
| Plain Stops | 55&10 |
| Shower Bath Cocks | 55&10 |
| Plain, Hose and Wash Tray Bibbs—ground joints | 55&10 |
| Hydrant Cocks and Corporation Stops | 55&10 |
| Compression Brass Work: | |
| Plain Hose and Wash Tray Bibbs | 50&10 |
| Straight Wash Tray Bibbs | 50&10 |
| Hopper Cocks | 50&10 |
| Rough Stops | 55&10 |
| Basin Cocks | 50&10 |
| Compression Double Bath Cocks | 50&10 |
| Chain Stays | 50&10 |
| Hose Bibb Ends | 55&10 |
| Sink, Bath or Wash Tray Plugs | 55&10 |
| Valve Couplings | 55&10 |
| Hose Pipes | 55&10 |
| Hose Sprinklers | 55&10 |
| Hose Couplings and Nipples | 55&10 |
| Connelly's Street Washers and Stop Cocks | 25 |
| Entire Discharge Cistern | 20 |
| Bartholomew Valve Closets | 20 |
| Single-Acting Lift Pumps | 60 |
| Copper Balls | 30 |
| Du Bois Lead Traps | Net |
| Copper Range Boilers from Revised List | 20 |
| Iron Range Boilers, 40 gallons and smaller | 60 |
| Copper Bath Tubs, from revised prices | 20 |
| Cast-Iron Pipe and Fittings, up to 6 inch | 60 |
| " " " larger sizes | 50 |
| Cast-Iron Traps, up to 6 inch | 55 |
| " " larger sizes | 50 |
| " Pipe Fixtures | 55 |
| Cast-Iron Sinks, Square Corner and Half Round: Plain, 50; Galvanized and Enameled | 40 |
| Slop Sinks | 40 |
| Sink Legs | 40 |
| Sink Backs | 40 |
| Sink Strainers | 40 |
| Plug Sink Strainers | 40 |
| Sink Couplings | 40 |
| Iron Sinks, Traps, Cess Pools and Plates | 40 |
| Stop Cock and Street Washer Boxes | 40 |
| Wash Basins and Urinals | 40 |
| Hoppers | 40 |
| Hoppers, long or short | 40 |
| Boiler Stands | 40 |
| Iron Tanks | 35 |
| Improved Pipe Cutting and Threading Machines | 15 |
| Patent I X L Pipe Cutting and Threading Machines | 5 |
| Bolt Threading and Nut Tapping Attachment | 10 |
| Malleable Iron Stocks and Dies | 40 |
| Solid Dies, right or left | 40 |

## J. F. Wollensak's Sample Case.

J. F. Wollensak, manufacturer of Locksmiths' and other Hardware specialties, 225 to 229 Lake street, Chicago, has invented

*Fig. 1.—J. F. Wollensak's Sample Case.*

a sample case of striking merit, which he uses for displaying samples of Keys, but which is well adapted for a variety of other goods. Two illustrations of this case are presented herewith. One shows the case complete, with the lid partly

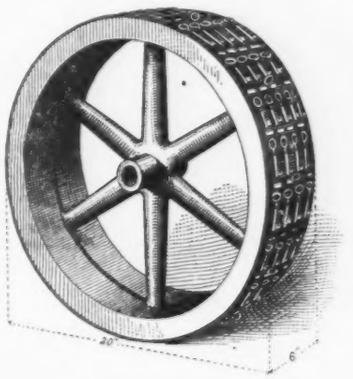


*Fig. 2.—Detail of Sample Case.*

open. The other shows one of the pulleys or rolls on which the samples are fastened. The pulleys, of which six are thus used, are made of cast iron, with the rim incased in wood. Billiard cloth is fastened on the face of the pulley to form a background for the samples, which are secured in their places by small staples. Space is left under each row of samples for price tags. The pulleys used in this case are 20 inches in diameter, outside measurement, with a face 6 inches wide. They revolve on the shaft independently, screw-eyes being inserted at frequent intervals on their face to take hold of when turning

the roll for the inspection of the samples. The hight from the floor to the shaft is 33 inches, and the extreme width of the case is 35 inches. The top is principally made of glass, with a mirror in the back to reflect the samples. The lower part of the case can be utilized for storage purposes, if desired, there being room for drawers below the rolls. The lid of the case is curved to conform to the shape of the pulleys and rests on the shaft by an arm extending down each side of the case, a counterweight on the opposite end of each arm serving to balance the lid and hold it in any position desired. The counterweight is a cast-iron plate, thin enough to move freely up and down between the end pulleys and the sides of the case. To balance the rolls, counterweights may be tied to the spokes of the pulleys.

The object of using iron pulleys is to provide against warping, which would be the case if they were made of wood. The inventor found, by experience, that while wooden pulleys are cheaper than iron they are a constant source of annoyance when used for this purpose, as they swell in damp weather and bind. An ordinary unturned iron pulley is suitable. After the rim is covered with wood it is turned true in a lathe, and the billiard cloth is glued on. The pulleys are all of the same size and face, so that they will be interchangeable with one another and from one case to another. This enables a rearrangement of samples from time to time, also the insertion of new rolls as a line of samples increases, thereby bringing the samples of a line together.

## Arrangement of Stores.

We take pleasure in laying before our readers this week a plan view showing the arrangement of the stove and hardware store of Miles, Strevell & Ulmer, at Miles City, Montana. This is a section of country from which our readers hear but seldom, and an opportunity to inspect the plan adopted by enterprising merchants in the Northwest in displaying their specialties may prove interesting.

The company occupy an attractive two-story structure, the main floor of which is 140 x 24 feet in size, divided into two apartments connected by an arch. The front or main store room is 24 x 80 feet in plan, while the rear is 24 x 60 feet. The company do not lay claim to any great novelty in the arrangement of their stock, and, while several changes suggest themselves, they submit the sketch in the hope that some of their ideas may prove of interest to the trade. An inspection of the drawing will show the main door placed in the center of the store front, permitting of capacious show windows on both sides. A feature which at once attracts the notice of the reader is the customers' office, located at the right-hand side of the store, near the front door. The company state that this would not be necessary in a more thickly populated section of the country, but in that region where customers come from a distance of 175 miles or more and remain in town for two or three days at a time such accommodations as those above noted are employed as headquarters. Miles City is also designated as the "cow town" of the Northwest, and in the customers' office will always be found a greater or less number of stockmen. One of the walls of this office is used as a sample board, being 14 feet square. An upper section, 8 x 14 feet in size, is covered with blue flannel, upon which are arranged in various designs, and with artistic effect, saws, chisels, augers, axes and other bright goods. In the center of the blue sample board is finely mounted an elk's head, which was presented to the firm by one of their largest customers. It is a very handsome ornament, and attracts the attention of visitors, especially of "tenderfeet," as Eastern people are called when first they arrive in the West. Below the blue sample board are a number of smaller boards, ½-inch thick and 14 x 24 inches square, on which are fastened samples of locks, hinges, both strap and T, bronze and common butts, shelf brackets, cupboard turns and catches, coat and hat hooks, auger bits, bolts, padlocks, wrenches, files, pincers, nippers, wire cutters, &c.

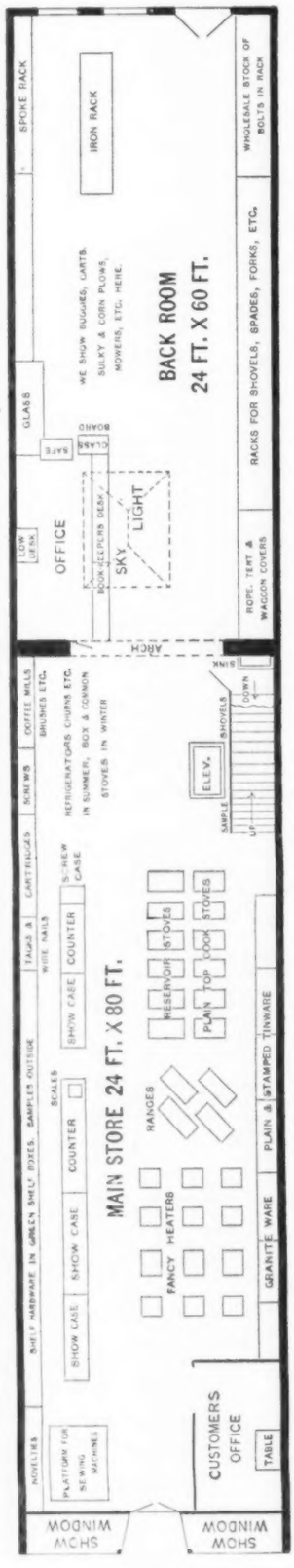



*Fig. 276.—Plan of Store of Miles, Strevell & Ulmer, Miles City, Montana.*

Immediately beyond the customers' office are displayed the fancy heating stoves, so arranged that the customer can pass among them with the opportunity of inspecting each individual stove. This is a feature which the company find very advantageous. Beyond these are the ranges so disposed as to at once command the attention of the customer, while beyond are the plain and reservoir cook stoves. Along the sides of the store shelving is arranged for the display of small goods. This shelving is 10 feet in hight, with a base shelf wide enough to walk on. That portion nearest the front of the store is devoted to granite and fancy tea and coffee pots, stamped japanned ware, &c., beyond which is a general assortment of plain and stamped ware. Beneath the base shelf is kept hollow-ware, sad-irons, cow bells, drip-pans and articles of a kindred nature. At the rear of the main room and at the right hand is the elevator, running from the basement to the floor above, also the stairways leading to the basement and second story. Upon the side of this stairway is a sample board for the display of shovels, spades, scoops, forks, rakes, hoes.

Directly opposite to the customers' office is a platform for the display of sewing machines. Extending along the left side of the main room are show cases and counters. Against the wall is shelving, upon which, toward the front, are displayed tea trays, cuspidors, crumb trays and novelties in brass goods. Above the base shelf is a space forming a shelf 3 feet in hight. In summer it is used for wire cloth and in winter for stove boards. The upper shelves contain light hardware placed in green linen-edge shelf boxes without covers. The shelves are just wide enough apart to receive the boxes, which are prevented from entering too far by cleats fastened to the shelf. Samples of goods are neatly fastened to the outside of the boxes by means of fine copper wire or, in the case of locks and kindred articles, screwed on. This is considered by the company much more satisfactory than original packages. Toward the rear are kept tacks, wire nails, cartridges, screws, brushes coffee-mills, &c. At the rear of the line of counters is a screw case and a space which in summer time is devoted to the display of refrigerators, churns, &c., and in winter to common and box stoves. Under the base shelf, at the left as the store is entered, are iron and steel nails and a retail stock of horseshoes. Directly under the shelf are drawers in which are kept saws, braces, drawing knives, &c. The counters are made with pigeon-holes which extend from front to back, and which contain broad axes, picks, mattocks, bolts, strap and T hinges and the like.

In the rear room, which, as will be seen from the engraving, is 24 x 60 feet in plan, are located the office and wholesale stock of material. At the right, against the wall, are spaces for tent and wagon covers, rope, shovels, forks, spades, bolts, &c. At the left is the office, with a skylight immediately overhead, which affords light and ventilation to that part of the store. A space beyond the office is for wagons, carts, plows, mowers, &c., in the rear of which is an iron rack. The doors at both front and rear of the store are double.

The basement extends under the entire building, and is devoted to the storage of nails, barb wire, plows, mowing machines, wagons, &c.

The second floor of the building is occupied by the tinshop, a sketch of which is not shown. It is accessible by means of both elevator and stairway. In arrangement it is something like the shop described some weeks ago by Mr. John S. Brooks, some features of which this firm propose to adopt. The front portion of this floor is used to display second-hand stoves and surplus stock.

The firm state that they would be pleased to hear from other stove and hard-

ware dealers on the subject, both through the columns of *The Metal Worker* and by direct correspondence.

## The Cipher Competition.

Since publishing the solutions to the cipher problem presented in *The Iron Age* of August 30 we have received the following from a correspondent at Greenville, Miss. The date of his letter is sufficient evidence that he had not seen the previous solutions, so we take pleasure in presenting his method of solving the enigma.

In *The Iron Age* of recent date I find a ciper problem for which solutions are invited: 6 ol = akl; hence l must be 2, 4, 6 or 8. 6 r = lt; hence l must be less than 6. If r is 4 the product would be lr. Hence l must be 4, and the only other number that will make a product ending with l (4) is s or 9. Hence we get l = 4; r = 7; t = 2 and s = 9. The remainder of the problem is worked out as follows:

r × 6 = lt
7 × 6 = 42
s × 6 = wl
9 × 6 = 54
w × 6 = am
5 × 6 = 30
a × 6 = ek
3 × 6 = 18
tae × 6 = eako
231 × 6 = 1386
METAL WORKS
0 1 2 3 4 5 6 7 8 9

After working out the above problem, on looking behind me on one of the boxes I saw the words I use written out in the following cipher. Perhaps some of your readers might wish to solve it:

| | | Each. | ½ doz. |
|---|---|---|---|
| Pocket Knives.. | No. 15 | e | na |
| " | No. 41P | ts | bin |
| " | No. 472I | nh | anc |
| " | No. 936I | cb | ise |
| " | No. 8418 | hci | cht. |

## Equalization of Stove Prices.

With stoves manufactured in as many different parts of the country as at present, and with a very large consumptive demand at points remote from the foundries, the need of branch houses located at prominent distributive points becomes very apparent. When, for example, a half dozen foundries have established warehouses and their managing representatives at a certain point, there is nothing more natural nor anything more advantageous to all concerned than a general understanding about prices. Otherwise indiscriminate cutting would soon prevail, and profits would rapidly disappear. With a friendly understanding established in this way things are very likely to run along smoothly until some untoward event disturbs the harmony. If, for further example, one of the foundries with aggressive enterprise pushes out a new branch, say 500 miles or more toward the great consuming territory of the country, and begins to supply stoves from that point at the same rates as are made at home or at the distributing center where the original branch houses were located, the other concerns are at once placed at a d'sadvantage, and soon see that something must be done in order to hold their trade. The result of such circumstances, as we have briefly outlined, are sometimes most disastrous. In other cases they are happily managed in a way to save great loss.

The situation in the West at the present time is very inadequately typified by the hypothetical instance above cited, but the little flurry in prices on certain lines of stoves which has caused the managers of branch houses in Chicago some uneasiness of late has for its cause circumstances in some particulars comparable with those we have described. Agreements to equalize prices, by which a concern situated near the consumer shall have no advantage, in this one item at least, over those further away, stand at best on an uncertain foundation, and there is ever present the temptation to break them. Sharp competition and the natural jealousies of men in the same trade make it almost impossible for rival houses to govern themselves by agreements which in however slight a degree reduce their opportunities for trade to a point below that to which their geographical location would seem to entitle them. When a break occurs, however small it may be at first, the tendency is toward a stampede, and a stampede once instituted, irrespective of whom the original guilty party may be, it is very difficult to stop. If differences which have been troubling the Chicago houses and other Western concerns the past few weeks have been permanently and satisfactorily adjusted, and if the danger of a break in prices at the commencement of what promises to be an active season's trade has been averted, the stove industry at large is to be congratulated. The first reports that reached us were alarming in character, but later advices are reassuring, although it is still evident that there are some houses that are disposed to pursue their own course and to act independently of the others.

Agreements to equalize prices are not the only contracts which in the heat of competition it is convenient to break or modify to suit circumstances. The buyer of stoves watches the game with great interest and with entire willingness to take a hand in it whenever it may be to his advantage to do so. With freights to a given point conceded, he next turns his attention to a special discount for cash, or to an allowance for some other reason; or he tries to get invoices dated ahead as a concession for a liberal order to an over anxious stove salesman. In one way or another he frequently manages to buy stoves below the market price. The different concessions, allowances and rebates which stove manufacturers are thus called upon to face at the present time are most serious in character, and promise to work great injury if not speedily stopped. What the remedy is, beyond fair trading and a decent respect for one's competitors, we shall not attempt to point out. We simply direct attention to these things because they are so frequently mentioned in our correspondence of late, and because they are uppermost in the mind of every managing stoveman.

The stove manufacturers of the entire country, and particularly those who find their largest market in the West, have before them, we believe, a season of large demand. The fall and winter at present promise well, and all that is needed to make it satisfactory in final results is healing the breaches that exist—in other words, closing up the ranks and standing shoulder to shoulder. Reports from the entire country continue to be favorable, and nothing, therefore, can be more foolish or disastrous at this time than a disagreement between leading concerns, or a competitive struggle for trade, that shall result in the demoralization of prices. Retailers are interested in the stability of prices to almost as great an extent as the manufacturer, and, therefore, the welfare of all is to be served by careful and conservative action.

## Why Stove Orders are Tardy.

It is generally conceded that the prospects in the stove trade at the present time are excellent, and yet we hear numerous complaints that orders are slow in coming in, and that, instead of experiencing the brisk trade at this season that is usual, some warehouses are comparatively dull. In view of the fact that the crops are good, business interests are prosperous, and that there is a very large demand to be supplied this fall, the question naturally arises: Why are stove orders tardy? The answer is readily found, and is, in brief, the excellent shipping facilities which are at present enjoyed in almost every part of the land. The improved transportation enjoyed by the West has affected trade in Chicago, perhaps, more than at any other point. Orders are delayed simply because goods when bought can be shipped in short time. During the past week or ten days a considerable number of visitors have been in Chicago, and their presence has to some extent revived the recollections of former years when Chicago salesrooms were fairly thronged at certain seasons of the year by customers from distant localities. There is, however, less occasion for customers to visit Chicago at the present time than formerly, because the enterprise of manufacturers causes their travelers to call upon customers; while, on the other hand, the action of the Interstate Commerce law, which has tended to diminish the number of passes, has made it more expensive for dealers to visit the city. But, as already stated, the great increase in commercial facilities probably has much to do in influencing many dealers to withhold orders for stocks of stoves. They know that within a very short time from the receipt of an order the manufacturers will have their stoves on the way, and that they will be promptly delivered, whether the season be winter or summer. Railroads now reach almost every town of any importance in the Northwest, and many towns are served by two or more lines, between which there is great rivalry for business. Because of this rivalry the time for delivering goods by freight has been greatly shortened. Stoves can now be delivered in St. Paul in two days' time from Chicago, instead of a week as formerly. Denver is reached in four days, instead of two weeks. Shipments even to Los Angeles, Cal., are guaranteed in eight days, against the former time of a month.

## The Bee Hive Bank.

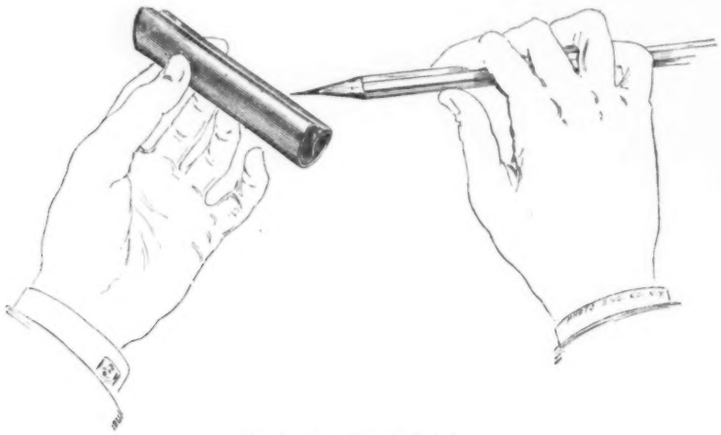
Wm. Mitchell Gobeille, who is located at the corner of Monroe and Penn streets, Cleveland Ohio, has brought out an attractive addition to the general line of toy

*Bee Hive Bank.*

banks which are at present before the public. It may be described as the Bee Hive Bank, and is very satisfactorily represented by the accompanying engraving. The ornamentation makes it resemble an old-fashioned straw bee hive. The base measures 6 inches square, and the hight is also 6 inches. The corners of the base are inscribed with the words, "Industry," "Honesty," "Economy" and "Temperance." The slot is adapted to receive anything from a silver dollar to the smallest coin. It is provided on the inside with a rubber piece, which prevents the coins from being rattled out. The bottom of the bank underneath the base is provided with a lock and key. By releasing the lock an opening is revealed in the base through which the savings may be withdrawn.

### Duplex Pencil Pointer.

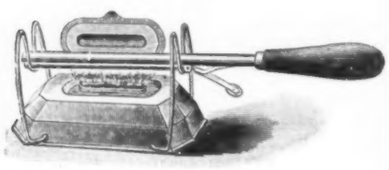
Kolesch & Co., 155 Fulton street, New York, are putting on the market a pencil pointer, designed especially for draftsmen's and artists' use, which is illustrated in the accompanying cut. It is intended for sharpening the lead of a pencil to a very fine point, either round or knife edged. It is made of brass, handsomely nickel-plated, so arranged as to hold a piece of fine emery cloth in the position shown in the cut. This gives the abrading surfaces by means of which the pencil is pointed. The substitution of a new piece of emery cloth is easily accomplished, as the inside holder can be pushed out, when a new sheet can be readily inserted. The illustration represents the use of the pointer in giving a round point to a pencil, but if a flat edge is desired it is explained that the point may be pressed lightly in the groove of the sharpener and drawn lengthwise from end to end. The sharpener retails for 25 cents.



*The Duplex Pencil Pointer.*

### The Perfection Curling Iron and Heater.

The illustration given below represents this article, which is put on the market by the Perfection Mfg. Company, Rochester, N. Y., for whom it is made by Yawman & Erbe, of that city. The heater, which is 3¼ inches long, is made of brass and nickel-plated. It is filled with cotton to prevent the spilling of the alcohol. The wick-holder is easily removable, so as to permit the convenient filling of the heater. The arms on which the curling iron rests while being heated, as shown in the cut, after the lid has been shut down, fold compactly, so as to make the heater occupy very little space. The form of the curling iron, which is 7 inches in length, is shown in the engraving. The points made by the manufacturers in regard to this neat and simple contrivance are—that there is no odor or smoke connected with its use, and that the iron will not soil the hands; that it can be carried in the pocket; that it gives an intense heat, heating the iron, it is claimed, in half a minute, and that it is inexpensive. The heater and the iron are put up in a neat box, and it is anticipated that it will meet a want of the trade.



*The Perfection Curling Iron and Heater.*

### Labor-Saving Dust Pan.

The Cline Mfg. Company, 70 and 72 West Washington street, Chicago, are manufacturing a dust-pan of new design. It is made of tin, neatly japanned, and is intended to lie flat on the floor, where it is held in position by the operator's foot, as shown in the accompanying cut. A projection extends beyond the point of the pan for this purpose, and it also has a hole punched in it by which the pan can be hung up. The pressure of the foot causes the edge of the pan to stick close to the floor so that none of the sweepings can pass under it. As the pan is not held by the hand, bending over is unnecessary. A handle is attached on the top of the pan so that it can be held by the hand when used as a crumb-pan. A patent has been applied for.

*Labor-Saving Dust Pan.*

### The Crown Picture Hanger.

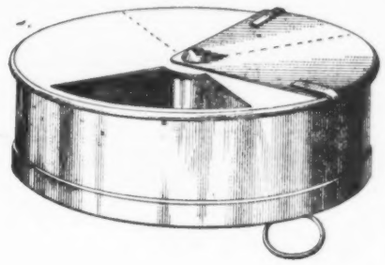
The illustrations given below represent a new picure hanger, which is put on the market by the Brinkerhoff Company, Auburn, N. Y., of which a full description is given in their very complete catalogue, which is devoted to an exhibition of the different styles and patterns which they are making. This hanger is intended to furnish something for the purpose of hanging pictures more artistic than the goods which are now generally in use, while at the same time it possesses, it will be observed, special features. These hangers are intended to hold the pictures securely, their construction being such as to prevent the moving of the wire on the hook and the falling of the picture to the floor in case the fastening of the wire at one side of the frame should give way. The patent locking construction is a feature of these hangers, on which special emphasis is laid. The hanger is illustrated in the cuts, Fig. 1 showing the wire placed upon the hanger before adjustment, and Fig. 2 showing the wire adjusted in the position required for locking it. These picture hangers are made in different patterns and in a variety of finish. Besides the regular line of single hangers double hangers are also made which furnish means for suspending a picture from any desired point, even though the ends of the molding should meet at the point where it is desired to hang the picture. In these double hangers between the engaging hooks is an extra hanger from which a small picture can be suspended and be free from the supporting wires of the larger picture. Another modification of the same hanger is for use in connection with nails or knobs, in which the nail or the screw by which the knob is fastened passes through a hole in the upper part of the hanger, thus fastening it securely in place, and giving the advantages of the locking device.

*Fig. 1.—Crown Picture Hanger.—Wire Before Adjustment.*

*Fig. 2.—Crown Picture Hanger.—Wire Adjusted.*

## Rivet Boxes.

In respect to the rivet box illustrated in Fig. 1, a correspondent writes referring to it as having been found very satisfactory in use: "I would like to submit a box that I made some time since, and which I have been using very satisfactorily for a term of months. I think it is the best box I have ever seen. I send by this mail a model, from which you will understand what I refer to. The box may be made with any number of bins to suit, and can be arranged to hang on the wall or carry in a tool box, and may be of such diameter as the user



*Rivet Boxes.*—Fig. 1.—*A Novel Construction.*

prefers. The one that I am using is 5½ inches in diameter and 1½ inches deep, and arranged to hold 4 sizes of rivets; by making the box larger more sizes could be included. There is no trouble about the rivets catching in the sliding top, provided the partitions are brought up to the slide cover. The box referred to has the special advantage of never spilling and mixing the rivets. It is equally serviceable for use for stove bolts."

From the model which our correspondent sends us we have had the accompanying engraving prepared. The box, it will be noticed, is drum-like in shape with one head put on in such a way as to turn by means of a central pivot. This head has a quarter opening through which the rivets may be withdrawn. When one division of the box is open all the others are closed. For the purpose of shutting up the box entirely an auxiliary sliding lid is provided, which shuts over the opening. As mentioned by our correspondent, the box may be carried in a tool box, or it may be hung on the wall. The model that has been sent us is arranged for hanging up.

Another style of rivet box is illustrated below, Fig. 2, concerning which our correspondent says: "Inclosed I hand you a sketch of a rivet box for holding 14 sizes; or it may be used for holding seven sizes of rivets, one-half of each being tinned and the other half black. When using two or more kinds of rivets, a box constructed on this plan is very handy to pick from. It is readily placed in front of the workman on the bench. The usual way of taking a box with one kind of rivets, and then being compelled to go after another box with a different kind of rivets as the work changes, is very expensive, and by the use of this device is entirely avoided. The box here shown can be made by taking a sheet of tin 12 x 14 inches, dividing it the 12-inch way into two pieces, and the 14-inch way in seven pieces for the partitions. Then form the pieces so as to make a tube 14 inches long. Then bend it backward in the middle, thus forming it in the shape of half tubes, the adjacent sides of which are connected; next solder on the two ends, the shape of which is clearly shown in the engraving. Afterward insert the partitions, and supply a handle.

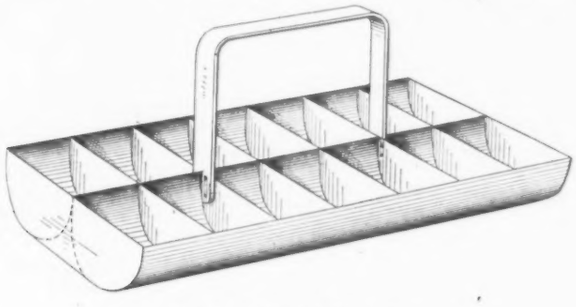
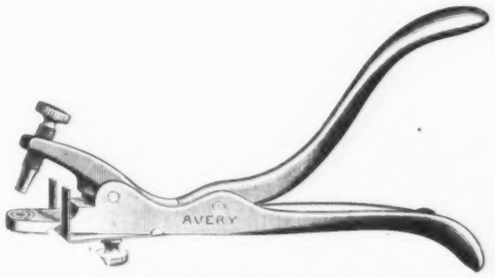


Fig. 2.—*A Useful Rivet Box.*

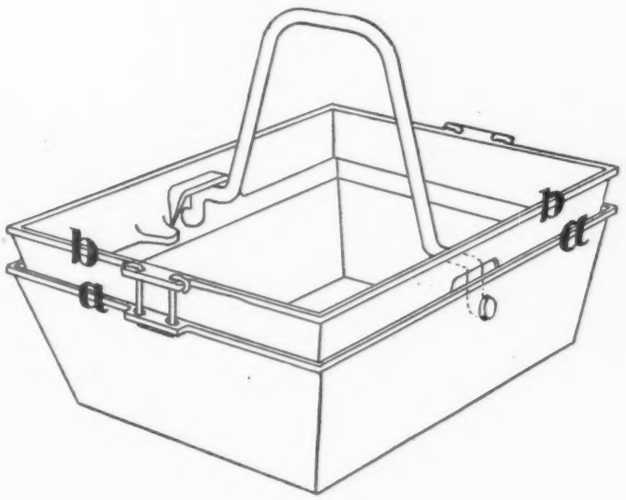
## Combined Leather Punch and Saw Set.

W. G. Avery Mfg. Company, Cleveland, Ohio, are manufacturing Avery's Combined Leather Punch and Saw Set, which is illustrated in the accompanying engraving. It will be seen that this tool is operated by a compound lever which gives the requisite power, a pound on the handles being referred to as giving 12 pounds pressure on the tooth of the saw. The movable gauge to be used in setting the saw will be observed, it being fastened readily at any desired point by means of a thumb-nut on the lower side. Besides being used as a saw set, this tool also will serve as a punch, the manner in which the




*Avery's Combined Punch and Saw Set.*

punch tube is attached to the arm being shown in the illustration. The simplicity of this article and its efficiency and convenience for the purposes for which it is designed are points that are made in regard to it by the manufacturers. Each tool is fully nickel-plated and is packed in a separate box with directions for use.




*New Safety Ash Pan.*

## New Safety Ash-Pan.

Arthur W. Walker, 31 Union street, Boston, Mass., has recently devised a new safety ash-pan, the general features of which are illustrated in the accompanying engraving. As indicated in the cut, there is a second rim, *b*, inside of the usual top rim, *a*. By raising the handle the inside rim rises about an inch and this prevents the ashes from scattering. When the handle is lowered, after the pan is empty, the rim falls down in position. The motion of the upper rim is limited by wire loops or rivets shown at the ends. The same result may be accomplished by rising flaps, false bottom or other device, by means of which the capacity of the pan is increased by raising the handle. The rims, we are informed, may be of either cast or sheet iron; but if the upper rim, *b*, is of cast iron, the rim *a* may be dispensed with. The appliance is said to be exactly adapted to end hearth ranges.

The largest sorghum sugar mill in the country has commenced manufacturing at Topeka, Kan., and is expected to turn out 1,000,000 pounds of sugar this season and about 150,000 gallons of syrup. Farmers are paid $2 per ton for the cane, and the product of 1800 acres will be consumed.

### Panel Gauge, Trammel and Measuring Rod.

Fig. 1 of the engravings represents a new tool which the Humphrey Tool Company, of Warren, Mass., are putting upon the market. It is known as Humphrey's Panel Gauge, and combines with this function a trammel and measuring rod.

*Fig. 1.—Panel Gauge, Trammel and Measuring Rod.*

The tool is designed for wood-workers where the work is too wide for the common gauge. It consists of three sections, adapted to telescope together, as shown in the engraving, which represents the tool as partly extended. The sections are held at any length required by the thumb nuts which terminate the different parts, and which are arranged to clamp one part against the other. A smaller nut is provided on the end, which is useful for fine adjustments. A pencil may be passed through the head, and the tool in this form can be used as a trammel. Or the head may be removed, and the bar used as a measuring-rod, being in this form of sufficient length to measure a common window or door. The second engraving, Fig. 2, shows a view of the device end

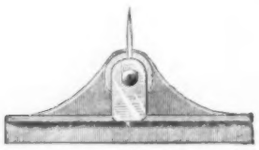


*Fig. 2.—End View of Trammel Gauge.*

on, so to speak, and indicates the nature of the head and also of the right-angled groove in the head, shown in profile in the previous engraving, by which the gauge is operated. The model before us is well made, the parts being carefully fitted and the workmanship excellent. The sections of the rod are plated, and the head japanned. This tool takes the place of a common gauge where the work is too wide for it. The old way was to use a bar of wood or a strip of metal, according to circumstances, which at best was unhandy, not only in use but to take care of when not in use. The compact form in which this tool can be placed when out of use is in itself a great advantage. The tooth is extended on the top side, so as to be used as a point or pivot on which to swing when a pencil is passed through the head, converting the tool into a trammel. Each end of the rod is furnished with a point to facilitate the use of the device as a measuring-rod. By this means the points of contact, as for example for measuring a door or other opening, are reduced to the smallest possible surface.

### The Kizer Hammer.

The Kizer Hammer Company, Washington, D. C., for whom Danforth & Pike, 114 Washington street, Boston, Mass., are agents, are introducing to the trade a new hammer called the "Kizer," which is represented in the accompanying illustration. It will be seen that this hammer differs from a regular nail hammer in the construction of the claw, which has a new device for drawing nails and terminates in a blade. The nail is drawn by means of a slot in the side, which bites or grips the nail at the point of contact. It is pointed out that the grip being transverse to the slot instead of parallel to it, as in other hammers, it is much stronger and the nail is drawn with certainty. It is claimed that wire nails, which are coming into such general use and are drawn with so much difficulty with the regular hammers, are drawn readily with this hammer, which from its construction is referred to a adapted to drawing a headless nail as well as one with a head. Its utility in drawing screws, the heads of which are broken off, is also alluded to, and it is claimed that if the screw projects sufficiently to permit the hammer to grip it it can be withdrawn. In the repairing of houses and frequently in the construction of new buildings it is desirable to remove the trimmings, such as moldings, &c., and to take the nails therefrom is difficult, as they cannot be driven through the face without damaging the molding, so that it is necessary frequently to cut off the nails. It is claimed that this trouble is avoided by using the Kizer hammer, as the head can be drawn through from the back. The blade of the hammer is described as finely tempered and given an edge, as shown, so that it may be used as a box scraper, for cutting hoops, beveling the edges of boxes preparatory to hooping them, and other uses, as an adze or draw knife, while it can also be used as a small vise for filing bolts, &c. The Kizer hammer is stated to be forged from the best tool steel and is made in two styles, the plain and the bell face, and the manufacturers guarantee to replace every hammer which is broken in legitimate use.

*The Kizer Hammer.*

### Fox-Tail Plumes.

The Chapman Mfg. Company., Meriden, Conn., have been making additions to their line of plumes for sleighs, one of which is represented in the accompanying illustration, which is referred to as one of the latest novelties in sleigh decoration. The plumes are used, as our readers will understand, on the dash of fine turnouts, and are furnished gray, red or black. Similar plumes are also made in several other styles besides that illustrated in the cut.

*Fox-Tail Plumes.*

**A Large Steel Casting.**—Reports of large steel castings come up from time to time. Among those of which we have lately heard is one made at the Homestead works of Carnegie, Phipps & Co., Pittsburgh, Pa. It was for the 42-inch cylinder of the 3000-ton shear in the slabbing mill. It weighed 54,600 pounds, and is a reserve casting for the tool in question. The same company have made a number of castings weighing 40,000 pounds and over.

# CURRENT HARDWARE PRICES.

## OCTOBER 3, 1888.

*Note.*—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is not stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobbers at the figures named.

### Ammunition.

*Caps, Percussion,* ₩ 1000—
Hicks & Goldmark's
F. L. Waterproof, 1-10's ..... 50¢
S. B. Trimmed Edge, 1-10's ..... 65¢
S. B. Ground Edge, Central Fire, 1-10's, 70¢
Double Waterproof, 1-10's ..... $1.40
Musket Waterproof, 1-10's ..... 50¢
G. D. ..... 28¢
S. B. ..... 30¢
} dis 25@25&7½%
Union Metallic Cartridge Co.
F. C. Trimmed ..... 50¢
F. L. Ground ..... 65¢
Cen. Fire Ground ..... 70¢
Double Waterproof ..... $1.40
Double Waterproof, in 1-10's ..... $1.40
} dis 25@25&7½%
S. B. Genuine Imported ..... 45¢
Eley's E. B. ..... 54¢ @ 55¢
Eley's L. Waterproof, Central Fire ..... $1.60

*Cartridges—*
Rim Fire Cartridges ..... dis 50&5&2%
Rim Fire Military ..... dis 15&2%
Central Fire, Pistol and Rifle ..... dis 25&5&2%
Central Fire, Military & Sporting ..... dis 15&5&2%
Blank Cartridges, except 22 and 32 cal., an additional 10% over above discounts.
Blank Cartridges 22 cal ..... $1.75, dis 2%
Blank Cartridges, 32 cal ..... $3.50, dis 2%
Primed Shells and Bullets ..... dis 15&5&2%
B. B. Caps, Round Ball ..... $1.75, dis 2%
B. B. Caps, Conical Ball, Swaged ..... $2.60, dis 2%

*Primers—*
Berdan Primers all sizes, and B. L. Caps (for Sturtevant Shells) ..... $1.00, dis 2%
All other Primers, all sizes ..... $1.20 dis 2%

*Shells—*
First quality, 4, 8, 10 and 12 gauge ..... dis 25&10&2%
First quality, 14, 16 and 20 gauge ($10 list), ..... dis 30&10&2%
Star, Club, Rival and Climax Brands, 10 gauge, $9 list ..... dis 32½%
Climax Brands, 12 gauge, $8 list ..... &10 2%
Club, Rival and Climax Brands, 14, 16 and 20 gauge ..... dis 30&10&2%
Selbold's Combination Shot Shells ..... dis 15&2%
Brass Shot Shells, 1st quality ..... dis 60&2%
Brass Shot Shells, Club, Rival, Climax, A, B & C ..... dis 65&2%
A. B. & C Co., I. X. L., 10 & 12 gauge ..... dis 40&5&2%
A. B & C. Co., "Special," 16 gauge ..... dis 30&10&5&2%
A. B. & C. Co. "Special," 10 & 12 gauge ..... 40&10&2%
Fowler's Patent, 10 & 12 gauge, ₩ 100 ..... $3.75
Small extras given by some dealers.

*Shells Loaded—*
List No. 19, 1887 ..... dis 20 & 10%

*Wads—*
U. M. C. & W. R. A.—B. E., 11 up ..... $2.00
U. M. C. & W. R. A.—B. E., 9&10 ..... 2.30
U. M. C. & W. R. A.—B. E., 7&8 ..... 2.60
U. M. C. & W. R. A.—P. E., 11 up. ..... 3.10
U. M. C. & W. R. A.—P. E., 9&10 ..... 4.00
U. M. C. & W. R. A.—P. E., 7&8 ..... 4.90
Ley's B. E., 11 up ..... $1.75
Ley's P. E., 11 @ 20 ..... $2.80
D's 20&2% With small extras.

**Anvils.**—Eagle Anvils ..... ₩ ℔ 10¢, dis 20 @ 20&5%
Peter Wright's ..... 9½¢
armitage's Mouse Hole ..... 8½¢
Armitage Mouse Hole, Extra ..... 11¼@11½¢
Trenton ..... 9½¢@9½¢
Wilkinson's ..... 9½¢@10¢
J. & Riley Carr Patent Solid ..... 11@11½¢

*Anvil Vise and Drill—*
Willers Falls Co ..... $18.00, dis 20%
Cheney Anvil and Vise ..... dis 25%
Allen Combined Anvil and Vise ..... $8, dis 40&10%
Moore & Barnes Mfg. Co ..... dis 33½%

### Augers and Bits.

Douglass Mfg. Co.
New Haven Copper Co.
Wm. A. Ives & Co.
Humphreyaville Mfg. Co.
French, Swift & Co. (F. H. Beecher)
} dis 70%

Cook's, Douglass Mfg. Co ..... dis 55%
Cook's, New Haven Copper Co ..... dis 50&10@50&10&5%
Ives' Circular Lip ..... dis 60%
Patent Solid Head ..... dis 30%
C. E. Jennings & Co., No. 10, extension l'p ..... dis 40%
C. E. Jennings & Co., No. 30 ..... dis 60%
C. E. Jennings & Co., Auger Bits, in fancy boxes, ₩ set, 32½ quarters, No. 5, $5; No. 3C, $8 ..... dis 20%
Lewis' Patent Single Twist ..... dis 45%
Russell Jennings' Augers and Bits ..... dis 25%
Imitation Jennings' Bits, new list ..... dis 60@65&5%
Pugh's Black ..... dis 20%
Car Bits ..... dis 50&10&60%
L'Hommedieu Car Bits ..... dis 15&10%
Forstner Pat. Auger Bits ..... dis 10%

*Ives' Augers—*
Ives
French, Swift & Co.
Douglass'
} dis 25&10@25&10&5%
Bonney's Adjustable ₩ doz. $48 ..... dis 40&10%
Stearns' ..... dis 20&10%
Ives' Expansive, each $4.50 ..... dis 50&10%
Universal Expansive, each $4.50 ..... dis 20%
Wood's ..... dis 25@25&10%

*Expansive Bits—*
Clark's small, $18; large, $36 ..... dis 35@35&5%
Ives' No. 4, per doz., $60 ..... dis 35@40%
Swan's ..... dis 40%
Steer's, No. 1, $26; No. 2, $22 ..... dis 35%
Stearns' No. 2, $48 ..... dis 20%

*Gimlet Bits—*
Common ..... ₩ gross $2.75 @ $3.25
Diamond ..... ₩ doz. $1.10, dis 25&10%
"Bee" ..... dis 25@25&5%
Double Cut, Shepardson's ..... dis 45@45&5%
Double Cut, Ct. Valley Mfg. Co ..... dis 50&10%
Double Cut, Hartwell's, ₩ gro ..... $5.25
Double Cut, Douglass' ..... dis 40&10%
Double Cut, Ives' ..... dis 60@60&5%

*Bit Stock Drills—*
Morse Twist Drills ..... dis 50&10&5%
Standard ..... dis 50&10&5%
Cleveland ..... dis 50&10&5%
Syracuse, for metal ..... dis 50&10&5%
Syracuse, for wood (wood list) ..... dis 30@30&5%
Williams' or Holt's, for metal ..... dis 50&10&10%
Williams' or Holt's, for wood ..... dis 40&10%

*Ship Augers and Bits—*
L'Hommedieu's ..... dis 15&10%
Watrous's ..... dis 15&10%
Snell's ..... dis 15&10%
Snell's Ship Auger Patt'n Car Bits, dis 15&10%
} Extras often given.

**Awl Hafts.**
Sewing, Brass Ferrule ..... $3.50 ₩ gross—dis 45&10%
Patent Sewing, Short ..... $1.00 ₩ doz—dis 40&10%
Patent Sewing, Long ..... $1.20 ₩ doz.—net
Patent Peg, Plain Top ..... $10.00 ₩ gross—dis 45&10%
Patent Peg, Leather Top ..... $12.00 ₩ gross—dis 45&10%

**Awls, Brad Sets, &c.**
Awls, Sewing, Common ..... ₩ gross $1.70—dis 35%
Awls, Shouldered Peg ..... ₩ gross $2.45—dis 40@40&10%
Awls, Patent Peg ..... ₩ gross 68¢—dis 40@40&10%
Awls, Shouldered Brad ..... $2.70 ₩ gross—dis 35%
Awls, Handled Brad ..... $7.50 ₩ gross—dis 45%
Awls, Handled Scratch ..... $7.50 ₩ gross—dis 35&10%
Awls, Socket Scratch ..... $1.50 ₩ doz—dis 25@30%

**Awl and Tool Sets.**
Aiken's Sets, Awls & Tools, No. 20, ₩ doz. $10—dis 35&10%
Gray's Ad. Tool Hdls., Nos. 1, $12; 2, $18.; 3, $12; 4, $9. dis 25@25&10%
Miller's Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18; dis 25%
Henry's Combination Haft ..... ₩ doz. $6
Brad Sets, No. 42, $10.50. No. 48, $12.50 ..... dis 70&10&5%
Brad Sets, Stanley's Excelsior, No. 1, $7.50.
Brad Sets, Stanley's Excelsior, No. 2, $4.00.
Brad Sets, Stanley's Excelsior, No. 3, $5.50.
} dis 30&10%

**Axes.**
*Makers' and Special Brands—*
First quality ..... ₩ doz. $6.00 @ $6.50
Others ..... ₩ doz. $5.50 @ $5.75

**Axle Grease.**
Fraser's, in bulk ..... Keg ₩ ℔, 4¢; Pail, ₩ ℔, 5¢ net
Frasers, in boxes ..... ₩ gross $9.50
Dixon's Everlasting, in bxs., ₩ doz., 1 ℔, $1.20; 2 ℔, $2
Dixon's Everlasting ..... 10-℔ pails, each, 55¢
Lower grades, special brands ..... ₩ gro $5.50 @ $7

**Axles.**—No. 1, 4¢ @ 4¼¢. No. 2, 5¼ @ 5½¢.
Nos. 7 to 18 ..... dis 50&55%
Nos. 19 to 22 ..... dis 60&10&10@70%
National Wrought Steel Tubular Self-Oiling
Standard Farm (1 to 5) and Special Farm (A1 to A5)
Less than 10 sets ..... dis 33⅓%
Over 10 sets ..... dis 33⅓&5%
X Strong Exp. (6 to 9), & XX Strong Truck (10 to 16):
Less than 10 sets ..... dis 10%
Over 10 sets ..... dis 10&5%

**Bag Holders.**
Sprengle's Pat., ₩ doz $18 ..... dis 60%

**Balances.**—Spring Balances ..... dis 50%
Common 24 ℔ ..... ₩ doz., $1.50—dis 50%
Chatillon's Spring Balances ..... dis 50%
Chatillon's Circular Spring Balances ..... dis 60%

**Bells.**
*Hand—*
Light Brass ..... dis 70&10%
Extra Heavy ..... dis 60&10%
White Metal ..... dis 60&10&10%
Silver Chime ..... dis 33⅓&10%
Globe (Cone's Patent) ..... dis 25&10@35%

*Door—*
Bong, Abbe's ..... dis 33⅓&10%
Bong, Yankee ..... dis 45&10%
Bong, Barton's ..... dis 40&10@50%
Crank, Taylor's ..... dis 25&10%
Crank, Brooks' ..... dis 50&10&2%
Crank, Cone's ..... dis 10%
Crank, Connell's ..... dis 20&10%
Lever, Sargent's ..... dis 60&10%
Lever, Taylor's Bronzed or Plated ..... net
Lever, Taylor's Japanned ..... dis 25&10%
Lever, R. E. & P. Co's ..... dis 50&10&2%
Pull, Brook's ..... dis 50&10&2%
Pull, Western ..... dis 25&10%

*Cow—*
Common Wrought ..... dis 60&10%
Western ..... dis 20&10%
Western, Sargent's list ..... dis 70&10%
Kentucky "Star" ..... dis 20&10%
Kentucky, Sargent's list ..... dis 70&10%
Dodge, Genuine Kentucky, new list ..... dis 70&70&10%
Texas Star ..... dis 50&10@50&10&5%
Talbot ..... dis 40@40&5%
Farm Bells ..... ₩ ℔, 3¢ @ 3½¢
Steel Alloy Church and School Bells ..... dis 40%

**Bellows.**—Blacksmiths' ..... dis 60&10&5@60%
Molders' ..... dis 40@40&10%
Hand Blowers ..... dis 40&10@50%

**Belting, Rubber.**
Common Standard ..... dis 70&10%
Standard ..... dis 70&70&5%
Extra ..... dis 60&10%
N. Y. R. & P. Co., Standard ..... dis 60&5%
N. Y. R. & P. Co., Extra Standard ..... dis 50&10%

**Bench Stops.**
Morrill's ..... ₩ doz $9—dis 50%
Hotchkiss's ..... ₩ doz $5.00—dis 10@10&10%
Weston's, per doz No. 1, $10; No. 2, $9 ..... dis 25&10&5%
McGill's ..... ₩ doz $3—dis 10%

**Bits.**—Auger, Gimlet Bit Stock, Drills, &c., see Augers and Bits.

**Bit Holders.**
Extension, Barber's ..... ₩ doz $15.00—dis 40@40&10%
Extension, Ives' ..... ₩ doz $20.00—dis 60&5@60&10%
Diagonal ..... ₩ doz $24.00—dis 40%
Angular ..... ₩ doz $24.00—dis 40&5%

**Blind Adjusters.**
Domestic ..... ₩ per doz $3.00—dis 33⅓%
Excelsior ..... ₩ doz $10.00—dis 50&10&2%
Washburn's Self-Locking ..... dis 20@20&10%

**Blind Fasteners.**
Mackrell's ..... ₩ doz pairs, $1.00—dis 20@20&10%
Van Sand's Screw Pattern ..... $15 ₩ gro.—dis 60&10%
Van Sand's Old Pattern ..... $15 ₩ gro.—dis 55&10%
Washburn's Old Pattern ..... $9 ₩ gro. net
Merriman's ..... new list, net
Austin & Eddy No. 2008 ..... $9 ₩ gro. net
Security Gravity ..... $9 ₩ gro. net

**Blind Staples.**
Barbed, ⅛ in. and larger ..... ₩ ℔ 7½¢ @ 8¢ net
Barbed, ¾ in ..... ₩ ℔ 8½¢ @ 9¢ net

**Blocks.**
Ordinary Tackle, list April 17, '85 ..... dis 40%
Cleveland Block Co., Mal. Iron ..... dis 50%
Novelty Tackle Blocks, Mal. Iron ..... dis 50%

**Bolts.**
*Door and Shutter—*
Cast Iron Barrel, Square, &c ..... dis 70@70&10%
Cast Iron Shutter Bolts ..... dis 70@70&10%
Cast Iron Chain (Sargent's list) ..... dis 65&10%
Ives' Patent Door Bolts ..... dis 60%
Wrought Barrel ..... dis 70@70&10%
Wrought Square ..... dis 70@70&10%
Wr't Shutter, all Iron, Stanley's list ..... dis 60&10%
Wr't Shutter, Brass Knob, Stanley's ..... dis 40&10%
Wrought Shutter, Sargent's list ..... dis 60&10%
Wrought Sunk Flush, Sargent's list ..... dis 55&10%
Wrought Sunk Flush, Stanley's list ..... dis 50&10%
Wrought B. K. Flush, Com'n Stanley's list ..... dis 55&10%

*Carriage—*
Com. list June 10, '84 ..... dis 25&2½@2%
Genuine Eagle, list Oct., '84 ..... dis 75&10%
Phila. pattern, list Oct. 7, 84 ..... dis 75&10@75&10&5%
R. B. & W. old list ..... dis 70%

*Tire—*
Common, list Feb. 28, 1883 ..... dis 70%
P. C. B. & N. Co., Empire, list Feb. 28, 1883 ..... dis 70%
P. C. B. & N. Co., Philadel., list Oct. 84 ..... dis 82½%
P.C.B.&N.Co., Keystone, Phil. list, Oct. '84 ..... dis 80%
P.C.B.&N.Co., Norway, Phil. list, Oct. '84 ..... dis 75&10%
Am. S. Co., Norway, Phil., list Oct. 16, '84 ..... dis 75&10%
Am. S. Co., Eagle, Phil., list Oct. 16, '84 ..... dis 80%
Am. S. Co., Philadel. list, Oct. 16, 84 ..... dis 82½%
Am. S. Co., Bay State, list Feb. 28, '83 ..... dis 70%
R. B. & W., Philadel. list Oct. 16, 1884 ..... dis 82%
R. & E. Mfg. Co ..... dis 70%

*Stove and Plow—*
Stove ..... dis 62½%
Plow ..... dis 60&5%
Am. S. Co. Stove, Annealed ..... dis 62½%
R. B. & W., Plow ..... dis 55%
R. B. & W., Stove ..... dis 62½%
R. & E. Mfg. Co., Stove ..... dis 62½%
Machine, according to size ..... dis 75&10@80%
Bolt Ends, according to size ..... dis 75&10@80%

**Borax** ..... ₩ ℔ 9½@10½¢

**Boring Machines.**

| Without Augers. | Upright. | Angular. |
|---|---|---|
| Douglass | $5.50 | $6.75 ..... dis 50% |
| Snell's, Rice's Patent | 5.50 | 6.75, dis 40&10&10% |
| Jennings | 5.50 | 6.75, dis 45@45&10% |
| Other Machines | 2.35 | 2.75 ..... net |
| Phillips' Pat., with Augers | 7.00 | 7.50 ..... net |

**Bow Pins**
Humason, Beckley & Co.'s ..... dis 60&10%
Sargent & Co.'s ..... $17 and $18, dis 60&10%
Peck, Stow & W. Co ..... dis 60&10@50&10&5%

**Braces.**
Backus, Nos. 110 to 114 and 31 to 33 ..... dis 60&5@60&10%
Backus, Nos. 6, 8, 12, 14 ..... dis 60&10&5%
Backus, Nos. 16, 18, 20, 29, 7, 9, 11 ..... dis 70&10&5%
Barber's, Nos. 10 to 16 ..... dis 50%
Barber's, Nos. 30 to 33 ..... dis 50%
Barber's, Nos. 40 to 63 ..... dis 50&10%
Barker's, Nos. 8, 10 and 12 ..... dis 75&10@80%
Barker's, Plated, Nos. 8, 10 and 12 ..... dis 65&10@70%
Osgood's Ratchet ..... dis 40&10@50%
Spofford's ..... dis 50&10%
Ives' New Haven Novelty ..... dis 70@70&5%
Ives' New Haven Ratchet ..... dis 60&5@60&10%
Ives' Barber Ratchet ..... dis 60&5@60&10%
Ives' Barbers ..... dis 60&5@60&10%
Ives' Spofford ..... dis 60&5@60&10%
Common Ball, American ..... $1.10 @ $1.15
Bartholomew's, Nos. 25, 27, 30 ..... dis 50&10@60&5%
Bartholomew's, Nos. 117, 118, 119 ..... dis 70@70&5%
Amidon's Barker's Imp'd Pla'n ..... dis 75&10@80%
Amidon's Barker's Imp. Nickeled ..... dis 65&10@70%
Amidon's Ratchet ..... dis 75&10@80%
Amidon's Eclipse Ratchet ..... dis 60%
Amidon's Globe Jawed ..... dis 40&40&10%
Amidon's Corner Brace ..... dis 40@40&10%
Amidon's Universal ..... 8 in., $2.10; 10 in., $2.25
Amidon's Buffalo Ball ..... $1.10 @ $1.15
P. S. & W. ..... dis 50&10%

**Brackets.**
Shelf, plain, Sargent's list ..... dis 55&10@55&10&10%
Shelf, fancy, Sargent's list ..... dis 60&10@60&10&10%
Reading, plain ..... dis 60&10@60&10&5%
Reading, Rosette ..... dis 60&10@60&10&10%

**Bright Wire Goods** ..... dis 87½@87½&10%

**Broilers.**

| | Inch. | ₩ 10 | ₩ 11 |
|---|---|---|---|
| Henis' Self-Basting | Per doz. | $4.50 | 5.50 | 6.50 |

**Buckets.**—See Well Buckets and Pails.

**Bull Rings.**—Union Co. Nut ..... dis 55%
Sargent's ..... dis 66⅔&10@70&5%
Hotchkiss' low list ..... dis 30%
Humason, Beckley & Co.'s ..... dis 70%
Peck, Stow & W. Co.'s ..... dis 50&10@50&10&10%
Elirich Hdw. Co., White Metal, low list ..... dis 50@50&10%

**Butcher's Cleavers.**
Bradley's ..... dis 25@30
L. & I. J. White ..... dis 20&5%
Beatty's ..... dis 40@40&5%

| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|
| $16.50 | 19.00 | 21.50 | 24.00 | 27.00 | 30.00 | 33.50 | 36.50 |

New Haven Edge Tool Co.'s ..... dis 40
P. S. & W ..... dis 33⅓&5@33⅓&10

**Butts.**
*Brass—*
Wrought Brass ..... dis 70@70&10%
Cast Brass, Tiebout's ..... dis 33⅓%
Cast Brass, Corbin's Fast ..... dis 33⅓&10%
Cast Brass, Loose Joint ..... dis 33⅓&10%

*Cast Iron—*
Fast Joint, Narrow ..... dis 50&10
Fast Joint, Broad ..... dis 55&10
Loose Joint
Loose Joint, Japanned
Loose Joint, Jap. with Acorns
Parliament Butts
Mayer's Hinges
Loose Pin, Acorns
Loose Pin, Acorns, Japanned
Loose Pin, Acorns, Jap, Pltd. Tips
} ..... dis 70&10

*Wrought Steel—*
Fast Joint, Narrow ..... dis 70&10%
Fast Joint, Lt. Narrow ..... dis 70&10%
Fast Joint, Broad ..... dis 70&10%
Loose Joint, Broad ..... dis 70&10%
Table Butts, Back Flaps, &c ..... dis 70&10%
Inside Blind, Regular ..... dis 70&10%
Inside Blind, Light ..... dis 70&10%
Loose Pin ..... dis 70&10%
Bronzed Wrought Butts ..... dis 40&10@40&10&5%

**Calipers.**—See Compasses.

**Calks, Toe**
Gaufler ..... ₩ ℔ 5½@6¢
Dewicks ..... ₩ ℔ 5½@6¢

**Can Openers.**
Messenger's Comet ..... ₩ doz $3.00, dis 25%
American ..... ₩ gross $3.00
Duplex ..... ₩ doz 25¢, dis 15@20%
Lyman's ..... ₩ doz $3.75, dis 20%
No. 4, French ..... ₩ doz $2.25, dis 55@60%
No. 6, Iron handle ..... ₩ gross $6.00, dis 45@50%
Eureka ..... ₩ doz $2.50, dis 10%
Sardine Scissors ..... ₩ doz $2.75@$3.00%
Star ..... ₩ doz $2.75%
Sprague, No. 1, ₩ ?, $4.25; ?, $2.50 ..... dis 50&10&10%

World's Best, ₱ gross, No. 1, $12.00; No. 2, $24.00, No. 3, $36.00.....dis 50&10 %
Universal.....₱ doz $3.00, dis 35&5 %
Domestic.....₱ doz $2.50, dis 45 %
Champion.....₱ doz $2.00, dis 50 %

**Cards.**
Horse and Curry.....dis 10&10 @ 10&10&10 %
Cotton.....New list, Aug., 1883, dis 10 @ 10&10 %
Wool ..... " " " dis 10 @ 10&10 %

**Carpet Stretchers.**
Cast Steel, Polished.....₱ doz $2.25
Cast Iron, Steel Points.....₱ doz 80¢
Socket.....₱ doz $1.75
Bullard's.....dis 25 @ 25&10 %

**Carpet Sweepers.**
Bissell No. 5.....₱ doz $17.00
Bissell No. 7 New Drop Pan.....₱ doz $19.00
Bissell Grand.....₱ doz $36.00
Grand Rapids.....₱ doz $24.00
Crown Jewel.....No. 1, $18; No. 2, $19; No. 3, $20
Magic.....₱ doz $15.00
Jewel.....₱ doz $17.00
Improved Parlor Queen, Nickeled Trimmings.....₱ doz $27.00
Improved Parlor Queen, Japanned Trimmings.....₱ doz $24.00
Excelsior.....₱ doz $22.00
Garland.....₱ doz $18.00
Parlor Queen.....₱ doz $24.00
Housewife's Delight.....₱ doz $15.00
Queen.....₱ doz $16.00
Queen, with band.....₱ doz $18.00
King.....₱ doz $30.00
Weed Improved.....₱ doz $18.00
Hub.....₱ doz $16.00
Cog Wheel.....₱ doz $16.00

**Cartridges.**—See Ammunition.

**Casters.**
Bed, Plate, Shallow Socket, Deep Socket.....{ New list; Brass...dis 55 @ 55&5 %; Others...dis 60 @ 60&5 %; 40&10 %
Yale Casters, list May, 1884.....dis 30&10&40 %
Yale, Gem.....dis 60@60&5 %
Martin's Patent (Phœnix).....dis 45&10 @ 50 %
Payson's Anti-friction.....dis 60 @ 60&10 %
"Giant" Truck Casters.....dis 10 @ 10&5 %
Stationary Truck Casters.....dis 45&10

**Cattle Leaders.**
Humason, Beckley & Co.'s.....dis 70 %
Sargent's.....dis 60&10 %
Hotchkiss.....dis 30 %
Peck Stow & W. Co.....dis 50&10 %

**Chain.**
Trace, 6-10-2, exact sizes, ₱ pair, $1.03; Trace, 6-10-3, exact sizes, ₱ pair, .92; Trace 7-10-2, exact sizes...₱ pair, 1.11 } dis 50&10@50&10&5 %
NOTE.—Traces. "Regular" sizes 3c net ₱ pair less than exact.
Log, Fifth, Stretcher, and other fancy Chains, list Nov. 1, 1884.....dis 50&10 @ 50&10&5 %
American Coil 3-16 ¼ 5-16 ⅜ 7-16 ½ ⅝ ¾
In cask lots, 8.75 6.25 5.00 4.50 4.40 4.00 3.75 3.50
Less than cask lots, add ½¢@1¢ ₱ ₱.
German Coil, list of June 20, 1887...dis 50&10&5@60 %
Ger. Halter Chain, list of June 20, 1887.....dis 50&10&5@60 %
Covert Halter, Hitching and Breast.....dis 50&2 %
Covert Traces.....dis 35@2 %
Oneida Halter Chain.....dis 60 @ 60&5 %
Galvanized Pump Chain.....₱ ₱ 5½¢ @ 6¢
Jack Chain, iron.....dis 70&10 @ 75 %
Jack Chain, Brass.....dis 65 @ 70 %

**Chalk.**—White.....₱ gro 50¢
Red.....₱ gro 70¢
Blue.....₱ gro 8¢
White Crayons.....₱ gro 12¢ @ 12½, dis 10¢

**Chalk Lines.**—See Lines.

**Chisels.**
*Socket Framing and Firmer—*
P., S. & W., New Haven and Middlesex, Mfg., Ohio Tool Co., Buck Bros., Merrill, L. & I. J. White, Witherby and Douglass.....{ dis 75&5 @ 75&10 %; dis 30 @ 30&5 %; dis 75 @ 75&5 %
Tanged Firmers.....dis 40&10 %
Tanged Firmers, Butcher's.....$4.75 @ $5.00
Tanged Firmers, Spear & Jackson's.....$5.00 to £
Tanged Firmers, Buck Bros.....dis 30 %
Cold Chisels, ₱ ₱.....16¢ @ 19¢

**Chucks.**
Beach Patent.....each, $8.00, dis 20 %
Morse's Adjustable.....each, $7.00, dis 20 @ 20&5 %
Danbury.....each, $6.00, dis 30 @ 30&5 %
Syracuse, Bals Pat.....dis 25 %

**Clamps.**
Providence Tool Co.'s Wrought Iron.....dis 25 %
Adjustable, Gray's.....dis 20 %
Adjustable, Lambert's.....dis 20 %
Adjustable, Snow's.....dis 40&5 %
Adjustable, Hammer's.....dis 15 %
Adjustable, Stearns'.....dis 20&10 %
Stearns' Adjustable Cabinet and Corner...dis 20&10 %
Cabinet, Sargent's.....dis 60&10 %
Carriage Makers', Sargent's.....dis 70&10 %
Eberhard Mfg. Co.....dis 40&5 @ 40&10 %
Warner's.....dis 40&10 @ 40&10&5 %
Saw Clamps.....See Vises

**Clips.**
Norway, Axle, ¼ & 5-16.....dis 55&5&5
Second grade Norway Axle, ¼ & 5-16.....dis 65&5
Superior Axle Clips.....dis 60&5&5 @ 60&5&5&5 %
Norway Spring Bar Clips, 5-16.....dis 60&5&5
Wrought-Iron Felloe Clips.....₱ ₱ 5½¢
Steel Felloe Clips.....₱ ₱ 5¢
Baker Axle Clips.....dis 25 %

**Cockeyes.**.....dis 50 %

**Cocks, Brass.**—Hardware list.....dis 40&10&2 %

**Coffee Mills.**
Box and Side, List revised Jan. 1, 1888.....dis 50&2 %
American, Enterprise Mfg. Co.....dis 20&10@30 %
The "Swift," Lane Bros.....dis 20&10 %

**Compasses, Dividers, &c.**
Compasses, Calipers, Dividers.....dis 70@70&10 %
Bemis & Call Co.'s Dividers.....dis 60&5 %
Bemis & Call Co.'s Compasses & Calipers.....dis 60&5 %
Bemis & Call Co.'s Wing & Inside or Outside.dis 50&5 %
Bemis & Call Co.'s Double.....dis 60 %
Bemis & Call Co.'s (Call's Patent Inside).....dis 30 %
Excelsior.....dis 50 %
J. Stevens & Co.'s Calipers and Dividers...dis 25&10 %
Starrett's Spring Calipers and Dividers.dis 25&10& 0 %
Starrett's Lock Calipers and Dividers.....dis 25&1 %
Starrett's Combination Dividers.....dis 25& 10 %

**Coopers' Tools.**
Bradley's.....dis 20 %
Barton's.....dis 20@20&5 %
L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %
Beatty's.....dis 40 @ 40&5 %
Sandusky Tool Co.....dis 30 @ 30&5 %

**Corkscrews.**
Humason & Beckley Mfg. Co.....dis 40 @ 40&10 %
Clough's Patent.....dis 33⅓ @ 33⅓&5 %
Howe Bros. & Hulbert.....dis 35 %

**Corn Knives and Cutters.**
Bradley's.....dis 10 %
Wadsworth's.....dis 25 %

**Cradles.**—Grain.....dis 50&2 %

**Crow Bars.**—Cast Steel.....₱ ₱ 4¢
Iron, Steel Points.....₱ ₱ 3½¢

**Curry Combs.**
Fitch's.....dis 50&10 @ 50&10&10 %
Rubber.....₱ doz $10.00, dis 20 %
Perfect.....dis %

**Curtain Pins.**—Silvered Glass.....net
White Enamel.....net

**Cutlery.**
Beaver Falls and Booth's.....dis 33⅓ %
Wostenholme.....$7.75 to £

**Dampers, &c.**
Dampers, Buffalo.....dis 50 %
Buffalo Damper Clips.....dis 50 %
Crown Damper.....dis 40 %
Excelsior.....dis 40&10 %

**Dividers**—See Compasses.

**Dog Collars.**
Embossed Gilt, Pope & Stevens' list.....dis 30&10 %
Leather, Pope & Stevens' list.....dis 40 %
Brass, Pope & Stevens' list.....dis 40 %

**Door Springs.**
Torrey's Rod, regular size.....₱ doz $1.30
Gray's.....₱ gro, $20.00, dis 20 %
Bee Rod.....₱ gro, $20.00, dis 20 %
Warner's No. 1, ₱ dos, $2.50; No. 2, $3.30, dis 40&10@50 %
Gem (Coil), list April 19, 1886.....dis 10 %
Star (Coil), list April 19, 1886.....dis 20 %
Victor (Coil).....dis 60 @ 60&10 %
Champion (Coil).....dis 60&10 @ 60&10&10 %
Philadelphia.....5 in., $5.00; 8 in., $7.75, dis 30 %
Cowell's.....No. 1, ₱ dos $18.00; No. 2, $15.00, dis 50 %
Rubbery complete.....₱ dos $4.50, dis 55&10 %
Hercules.....dis 50 %
Shaw Door Check and Spring.....dis 25 @ 30 @ 35 %
Elliott's Door Check and Spring.....dis 25 %

**Drawing Knives.**
P, S. & W., New Haven and Middlesex, Mfx., New Haven and Middlesex.....{ dis 75&5 @ 75&10 %
Merrill.....dis 60&10&10 %
Witherby and Douglass.....dis 75@75&5 %
Watrous.....dis 15&10 @ 25 %
L. & I. J. White.....dis 20&5 %
Bradley's.....dis 35 %
Adjustable Handle.....dis 25 @ 83⅓ %
Wilkinson's Folding.....dis 25 @ 25&5 %

**Drills and Drill Stocks.**
Blacksmiths'.....each, $1.75
Blacksmiths' Self-Feeding.....each, $7.50, dis 20 %
Breast, P. S. & W.....dis 40&10 %
Breast, Wilson's.....dis 30&5 %
Breast, Millers Falls.....each, $3.00 dis 25 %
Breast, Bartholomew's... each, $2.50, dis 25&10 @ 40 %
Ratchet, Merrill's.....dis 20 @ 20 & 5 %
Ratchet, Ingersoll's.....dis 25 %
Ratchet, Parker's.....dis 20 @ 20&5 %
Ratchet, Whitney's.....dis 20&10 %
Ratchet, Weston's.....dis 20@25 %
Ratchet, Moore's Triple Action.....dis 25 & 30 %
Whitney's Hand Drill, Plain, $11.00; Adjustable, $12.00.....dis 20&10 %
Wilson's Drill Stocks.....dis 1[illegible]
Automatic Boring Tools.....each, $1.75 @ $1.85
*Twist Drills—*
Morse.....dis 50&10&5 %
Standard.....dis 50&10&5 %
Syracuse.....dis 50&10&5 %
Cleveland.....dis 50&10&5 %
Williams.....dis 50&10&10 %

**Drill Bits.**—See Augers and Bits.

**Drill Chucks.**—See Chucks.

**Dripping Pans.**—Small sizes.....₱ ₱ 6¾¢
Large sizes.....₱ ₱ 6¾ ¢

**Egg Beaters.**
Dover.....₱ doz., $2.00
National.....₱ doz $4.50, dis 33⅓ %
Family (T. & S. Mfg. Co.).....₱ gro, $17.00@$18.00
Kingston (Standard Co.).....₱ gro, $6.50
Acme (Standard Co.).....₱ gro, $6.00
Duplex (Standard Co.).....₱ gro, $16.00
Duplex, extra heavy.....₱ doz extra $5.00
Rival (Standard Co.).....₱ gro. $12.00
Triumph (T. & S. Mfg. Co.).....₱ gro, f 10.50@11.50
Advance No. 1.....₱ gro $10.50
Advance, No. 2.....₱ gro $10.00
Bryant's.....₱ gro $15 00
Ayres' Spiral.....₱ gro $5
Double Hamblin & Russell Mfg. Co.).....₱ gro, $16.20
Easy (Hamblin & Russell Mfg. Co.).....₱ gro, $14.00
Triple Hamblin & Russell Mfg. Co.).....₱ gro, $16.20
Spiral (Hamblin & Russell Mfg. Co.).....₱ gro, $4.50
Paine, Diehl & Co's.....₱ gro $24.00

**Egg Poachers.**
Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $9.00.....dis 25 %

**Electric Bell Sets.**—Wollensak's.....dis 15 %
Bigelow & Dowse.....dis 20 %

**Emery.**

| | No. 4 to 40 gr. | No. 54 to 150 gr. | Flour, CF F | FF. |
|---|---|---|---|---|
| Kegs, ₱ ₱ | 4 ¢ | 5 ¢ | 2½¢ | |
| ¼ kegs, ₱ ₱ | 4¼¢ | 5½¢ | 2¾¢ | |
| ⅛ kegs, ₱ ₱ | 4½¢ | 5¾¢ | 3 ¢ | |
| 10-₱ cans, 10 in case | 6 ¢ | 6¾¢ | 5 ¢ | |
| 10-₱ cans, less than 10 | 10 ¢ | 10 ¢ | 7¾¢ | |

**Enameled and Tinned Ware.**—See Hollow-Ware.

**Escutcheon Pins.**
Iron, list Nov. 11, 1885.....dis 60&10 @ 50&10&5
Brass.....dis 60 @ 60&5 %

**Escutcheons.**
Door Lock.....Same discounts as Door Locks
Brass Thread.....dis 60 @ 60&10 %
Wood.....dis 25 %

**Faucets.**
Fenn's.....dis 40 %
Bohren's Patent Rubber Ball.....dis 25 %
Fenn's Cork Stops.....dis 33⅓ %
Star.....dis 60 %
Frary's Patent Petroleum.....dis 40&5&2 %
West's Patent Key.....dis 60&10 %
Anchor Lock.....dis 45 %
Metallic Key, Leather Lined...dis 60&10 @ 60&10&10 %
Cork Lined.....dis 70&5 @ 70&10 %
Burnside's Red Cedar.....dis 50 %
Burnside's Red Cedar, bbl. lots.....dis 50&10 %
J. Sommer's Peerless Best Block Tin Key.....dis 40 %
J. Sommer's IXL, 1st quality, Cork Lined.....dis 50 %
J. Sommer's Diamond Lock.....dis 40 %
J. Sommer's Perfection, Fla. Red Cedar.....dis 50 %
J. Sommer's Goodenough Cedar.....dis 50 %
Self-Measuring, Enterprise...₱ doz $36.00—dis 20&10 %
Self-Measuring, Lane's.....₱ doz $36.00—dis 25&10 %
Self-Measuring, Victor.....₱ doz $36.00—dis 25&10 %

**Felloe Plates.**.....₱ ₱ 6 @ 6¼¢

**Fifth Wheels.**—Derby and Cincinnati.dis 45&5 %

**Files.**
*Domestic—*
Nicholson Files, Rasps, &c.....dis 60&5 @ 60&10 %
Nicholson (X. F.) Files.....dis 25 %
Nichols n's Royal Files (Seconds)dis 75 (extra prices on certain sizes.)
Other makers, best brands.....dis 60&5 @ 60&10&5 %
Fair brands.....dis 60&10&10 @ 70 %
Second quality.....dis 70&5 @ 70 %
Heller's Horse Rasps.....dis 50&7½ @ 50&10 %
McCaffrey's Horse Rasps.....dis 50&10 %
*Imported—*
J. & Riley Carr.....List, April 1, 1883, dis 15 %
J. & Riley Carr Horse Rasps.....dis 10 %
Moss & Gamble.....List April 1, 1883, dis 15 %
Butcher.....Butcher's list, dis 20 %
Stubs.....Stubs list, dis 25 @ 30 %
Turton's.....Turton's list dis. 20 @ 25 %
Brewer' Horse Rasps.....American list d 60 %

**Flu ing Machines.**
Knox, 4¼-inch Rolls.....$3.25 each
Knox, 6-inch Rolls.....$3.60 each } dis 35 %
Eagle 3¼-inch Roll.....$2.15, dis 35 %
Eagle, 5¼-inch Roll.....2.85, dis 35 %
Crown, 4¼ in., $3.50; 6-in., $4.00; 8-in., $6.50 each, dis 35 %
Crown Jewel.....6-in., $3.50 each, dis 35 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 35 %
Domestic Fluter.....$1.50 each, net
Geneva Hand Fluter, White Metal..₱ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10.dis 30 %
Shepard Hand Fluter, No. 85.....₱ doz $15.30, dis 40 %
Shepard Hand Fluter, No. 110.....₱ doz $11, dis 40 %
Shepard Hand Fluter, No. 95.....₱ doz $8, dis 40 %
Clark's Hand Fluter.....₱ doz $15.00, dis 35 %
Combined Fluter and Rad Iron...₱ doz $15.00, dis 30 %
Buffalo.....₱ doz $10.00 dis 10 %

**Fluting Scissors.**.....dis 45 %

**Fly Traps.**
Paragon.....₱ doz $1.50 @ 1.75

**Fodder Squeezers.**
Blair's.....₱ doz $2.00
Blair's, "Climax".....₱ doz $1.25

**Forks.**—Hay, Manure, &c., Asso. list.....dis 65&5 %
Hay, Manure, &c., Phila. list.....dis 60 @ 60&5 %
Plated, see Spoons.

**Freezers, Ice Cream.**
Buffalo Champion.....dis 60&10&5 %
Shepard's Lightning.....dis 65 %
White Mountain.....dis 60 %

**Fruit and Jelly Presses.**
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Henis.....₱ doz $4.50
P. D. & Co.....₱ doz $4.50
Shepard's Queen City.....dis 40 %

**Fry Pans.**
High List.....dis 75&5 @ 75&10 %

| No.. | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| ₱ doz.. | $3.75 | 4.70 | 5.30 | 5.95 | 6.55 | 7.50 | 8.75 | 10.00 | 11.25 |

Low List.....dis 65&10 %

| No | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|---|
| ₱ doz.. | $3.00 | 3.75 | 4.25 | 4.75 | 5.25 | 6 00 | 7.00 | 8.00 | 9.00 |

**Fuse.**.....₱ 1000 ft.
Common Hemp Fuse, for dry ground.....$2.70
Common Cotton Fuse, for dry ground.....2.85
Single Taped Fuse, for wet ground.....4.75
Double Taped Fuse, for very wet ground.....6.00
Triple Taped Fuse, for very wet ground.....7.25
Small Gutta Percha Fuse, for water.....7.50
Large Gutta Percha Fuse, for water.....12.00

**Gauges.**
Marking, Mortise, &c.....dis 60&10 %
Starrett's Surface, Center and Scratch.....dis 25&10 %
Wire, low list.....dis 10&10 %
Wire, Wheeler, Madden & Co.....dis 10 %
Wire, Morse's.....dis 50 @ 50&5 %
Wire, Brown & Sharpe's.....dis 10 @ 20 %

**Gimlets.**—Nail and Spike.....dis 50&10&5 %
"Eureka" Gimlets.....dis 40&10 %
"Diamond" Gimlets.....₱ gross $5.00
Double Cut, Shepardson's.....dis 45 @ 45&5 %
Double Cut, Ives'.....dis 60 @ 60&5 %
Double Cut, Douglass'.....dis 40&10 %
"Bee".....₱ gross $12, dis 25 @ 25&5 %

**Glue.**—Le Page's Liquid.....dis 25 @ 25&5%
Upton's Liquid.....dis 35 %
W. N. Le Page's Improved Liquid Glue.dis25 @ 25&5 %

**Glue Pots.**
Tinned and Enameled.....dis 40&5 @ 40&10%
Family, Howe's "Eureka".....dis 40 %
Family, L. F. & C.'s "Handy".....dis 50 %

**Grindstones.**
Small, at factory.....₱ ton $7.50 @ 9.0

**Grindstone Fixtures.**
Sargent's Patent.....dis 70&10 %
Reading Hardware Co.....dis 30&10 %

**Hack Saws.**—See Saws.

**Halters.**—Covert's, Rope, ¼-in. Jute.....dis 50&2 %
Covert's, Rope, ¼-in., Hemp.....dis 40&2 %
Covert's Adj. Rope Halters.....dis 40&2 %
Covert's Hemp Horse and Cattle Tie.....dis 50&2 %
Covert's Jute Horse and Cattle Ties.....dis 60&10&2 %

**Hammers.**
*Handled Hammers.*
Maydole's.....List Dec. 1, 1885, dis 25 @ 25&1 0%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Verree.....
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.dis 30&10 %
Nelson Tool Works.....dis 40&10 %
Warner & Nobles.....dis 20 @ 25 %
Peck, Stow & Wilcox.....dis 40 %
Sargent's.....dis 33⅓&10 %
List Jan. 15, '87 Dis. 50 @ 50& 10 %
*Heavy Hammers and Sledges—*
8 ₱ and under.....₱ ₱ 40¢
8 to 5 ₱.....₱ ₱ 36¢
Over 5 ₱.....₱ ₱ 30¢
dis 70 & 10 @ 75 %
Wilkinson's Smiths'.....10½¢ @ 11¢ ₱ ₱

**Hand Cuffs and Leg Irons.**
Providence Tool Co., Hand Cuffs, $15.00 ₱ dos...dis 10%
Providence Tool Co. Leg Irons, $25.00 ₱ dos.....dis 10%
Tower's.....dis 25 %
Daley's Improved Hand Cuffs: 2 Hands, Polished, ₱ dos, $48; Nickeled, $57; 3 Hands, Polished, ₱ dos, $72; Nickeled, $84.....dis 25 %

**Handles.**
*Iron, Wrought or Cast.—*
Door or Thumb.

| No.. | 0 | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|
| Per doz.. | $0.90 | 1.00 | 1.18 | 1.35 | 1.50 |

.....dis 60&10&10
Roggin's Latches.....₱ doz. 30¢ @ 3
Bronze Iron Drop Latches.....₱ doz. 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88.....net
Barn Door.....₱ doz. $1.40, dis 10&10 %
Chest and Lifting.....dis 70 %
*Handles, Wood—*
Saw and Plane.....dis 40&10 @ 40&10&5 %
Hammer, Hatchet, Axe, Sledge, &c.....dis 35 %
Brad Awl.....gross $2.00
Hickory Firmer Chisel, assorted.....₱ gross 4.50
Hickory Firmer Chisel, large.....₱ gross 5.0[illegible]
Apple Firmer Chisel, assorted.....₱ gross 5.00
Apple Firmer Chisel, large.....₱ gross 6.00
Socket Firmer Chisel, assorted.....₱ gross 3.00
Socket Framing Chisel, assorted.....₱ gross 5.00
J. B. Smith Co.'s Pat. File.....dis 50 %
File, assorted.....₱ gross 3.75
Auger, assorted.....₱ gross 5.00
Auger, large.....₱ gross 7.00
dis 40 @ 40&10 %
Patent Auger, Ives'.....dis 30&10 %
Patent Auger, Douglass'.....₱ set $1.25 net
Patent Auger, Swan's.....₱ set $1.00 net
Hoe, Rake, Shovel, &c.....dis 50&10 %
*Cross Cut Saw Handles—*
Atkins' No. 1 Loop, ₱ pair, 30¢ No. 3, 22¢; No. 2 and No. 4 Reversible, 22¢.
Boynton's Loop Saw Handles.....50¢, dis 60 %
Champion.....10¢
**Hangers.**
Barn Door, old patterns.....dis 60&10&10 @ 70 %
Barn Door, New England.....dis 60&10&10 @ 70 %
Samson Steel Anti-Friction.....dis 5[illegible]
Orleans Steel.....dis 5[illegible]
Hamilton Wrought Wood Track.....dis 5[illegible]
U. S. Wood Track.....dis 5[illegible]
Champion.....dis 60&10 %
Rider and Wooster, Medina Mfg. Co.'s list...dis 70 %
Climax Anti-Friction.....dis 5[illegible]

Climax Steel Anti-Friction.... dis 50 %
Zenith for Wood Track.... dis 55 %
Reed's Steel Arm.... dis 50 %
Challenge, Barn Door.... dis 50 %
Sterling Improved (Anti-Friction).... dis 5%&10 %
Victor, No. 1, $15; No. 2, $16.50; No. 3, $18....dis 50&5 %
Cheritree.... dis 5%&10 %
Kidder's.... dis 50&10 @ 60 %
The "Boss".... dis 60 %
Best Anti-Friction.... dis 60 %
Duplex (Wood Track).... dis 60 %
Terry's Patent.... ₱ doz. dr, 4 in. $10; 5 in., $12.... dis 50&5 %
Cronk's Patent....No. 4, $12; No. 5, $14.40; No. 6, $18.... dis 50&15 @ 60 %
Wood Track Iron Clad.... ₱ ft. 10¢, dis 50&15 @ 60 %
Carrier Steel Anti-Friction.... dis50 @ 50&5 %
Architect.... ₱ set $6.00, dis 20 %
Eclipse.... dis 20&10
Felix.... ₱ set $4.50, dis 20 %
Richards'.... dis30@30&10 %
Lane's Steel Anti-Friction.... dis 40&10 %
The Ball Bearing Door Hanger....dis 20&10 @ 25&10 %
Warner's Patent.... dis 20@20&10 %
Stearns' Anti-Friction.... dis 20 @ 20&10 %
Stearns' Challenge.... dis 25&10 @ 25&10&10 %
Faultless.... dis 40 @ 40&5 %
American.... ₱ set $6; dis 20&10 %
Rider & Wooster, No. 1, 62½¢; No. 2, 75¢.... dis 40 %
Paragon, Nos. 1, 2 and 3.... dis 40&10 %
Paragon, Nos. 5, 6½, 7 and 8.... dis 20&10 %
Crescent.... dis 60@60&10 %
Nickel, Cast Iron.... dis 50 %
Nickel, Malleable Iron and Steel.... dis 40 %
Scranton Anti Friction Single Strap.... dis 33⅓ %
Scranton Anti-Friction Double Strap.... dis 40 %
Universal Anti Friction.... dis 40 %
Wild West, 4 in. wheel, $15; 5 in. wheel, $21.... dis 45 %
Star.... dis 4 &10 @ 40&10&5 %
May.... dis 50&5 @ 50&10 %

**Harness Snaps.**—See Snaps.

**Hatchets.**—List Jan. 1, 1886.

Isaiah Blood.... dis 35 @ 40%
Hunt's Shingling Lath and Claw.... dis 40&5 %
Hunt's Broad.... dis 40 %
Buffalo Hammer Co.... dis 40&10@50 %
Hurd's.... dis 40&10 @ 50 %
Fayette R. Plumb.... dis 40&10 @ 50 %
Wm. Mann, Jr., & Co.... dis 50 @ 50&5 %
Underhill Edge Tool Co.... dis 40&5 @ 40&10 %
Underhill's Haines and Bright goods.... dis 33⅓ %
C. Hammond & Son.... dis 40&10 @ 50 %
Simmons.... dis 40&10 @ 50 %
Peck's.... dis 40&10 @ 40&10&5 %
Kelly's.... dis 50@50&5 %
Sargent & Co.... d's 50 %
Ten Eyck Edge Tool Co.... dis 40&10@40&10&5 %
Collins, following list.... dis 10 %

| | | | |
|---|---|---|---|
| Shingling, Nos. 1 2 3 | ₱ doz $5.50 | $6.00 | $6.50 |
| Claw, Nos. 1 2 3 | ₱ doz 6.00 | 6.50 | 7.00 |
| Lathing Nos. 1 2 3 | ₱ doz 5.50 | 6.00 | 6.50 |

**Hay Knives.**

Lightning.... Mfrs. price ₱ doz $18, dis 25 % Jobber's Extras
Electric.... ₱ doz $17 } dis 30 @
Gem.... ₱ doz $18 } 30&5%
Wadsworth's.... dis 40&7½ @ 40&10 %
Carter's Needle.... ₱ doz $11.50 @ $12.00
Heath's.... ₱ doz $13.50 @ $14.00

**Hinges.**

*Wrought Iron Hinges—*

Strap and T.... dis 70&10&5 @ 70&10&10 %

| | | |
|---|---|---|
| Screw Hook and Strap. | 6 to 12 in., ₱ ₱ | 3¼¢ |
| | 14 to 20 in., ₱ ₱ | 3½¢ |
| | 22 to 36 in., ₱ ₱ | 2¾¢ |
| Heavy Welded Hook | 6 to 12 in., ₱ ₱ | 3¾¢ |
| | 14 to 20 in., ₱ ₱ | 3½¢ |
| | 22 to 36 in., ₱ ₱ | 2¾¢ |
| Screw Hook and Eye | ⅜ in. ₱ doz $1.50 | dis |
| | ½ in. ₱ doz $2.45 | 10% |
| | ⅝ in. ₱ doz $3.80 | |

Rolled Blind Hinges, Nos 32 and 34.... dis 50&10
Rolled Blind Hinges, Nos. 282 and 234.... dis 55&10 %
Rolled Plate.... dis 70&10 %
Rolled Raised.... dis 70&10 %

| | | |
|---|---|---|
| Plate Hinges | 8, 10 & 12 in., ₱ ₱ | 5 |
| "Providence" | over 12 in., ₱ ₱ | 4½ |

*Spring Hinges—*

Geer's Spring and Blank Butts.... dis 40 %
Union Spring Hinge Co.'s list, March, 1886....dis 20 %
Acme and U. S.... dis 30 %
Empire and Crown.... dis 20 %
Hero and Monarch.... dis 60 %
American, Gem, and Star, Japanned.... dis 20 %
American, Gem, and Star, Bronzed.... net
Oxford, Bronze and Brass.... net
Barker's Double Acting.... dis 20&10 %
Union Mfg. Co.... dis 25 %
Bommer's.... dis 30 %
Buckman's.... dis 15@20 %
Chicago.... dis 30 %

*Gate Hinges—*

Western.... ₱ doz $4.40, dis 55 %
N. E.... ₱ doz $7.00, dis 55 %
N. E. Reversible.... ₱ doz $5.20, dis 55&10 %
Clark's, Nos. 1 2 3.... dis 60&10&5 %
N. Y. State.... ₱ doz $5.00, dis 55&10 %
Automatic.... ₱ doz $12.50, dis 50 %
Common Sense.... ₱ doz pair $4.50, dis 50 %
Seymour's.... dis 45&10 %
Shepard's.... dis 60&10&5 %
Reed's Latch and Hinges.... ₱ doz sets $12, dis 50 %

*Blind Hinges—*

Parker.... dis 75&2 %
Palmer.... dis 50&5&10 %
Seymour.... dis 70&2 %
Nicholson.... dis 45&10 %
Huffer.... dis 50 %
Clark's, Nos. 1, 3, 5, 40 and 50.... dis 75&10&5&80 %
Clark's Mortise Gravity.... dis 50 %
Sargent's, Nos. 1, 3, 5, 11, 13....dis 75&10@75&10&5 %
Sargent's, No. 12.... dis 75&10&10 %
Reading's Gravity.... dis 75&10 @ 75&10&5 %
Shepard's Noiseless Niagara Buffalo, Champion, Steamboat, Clark's Old Pattern and Clark's Tip Pattern.... dis 75&10&5 %
Shepard's O. S., Lull & Porter.... dis 75&10 %
Shepard's Acme, Lull & Porter.... dis 75&5 %
Shepard's Queen City Reversible.... dis 75 %
Clark's Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.... dis 75&10&2½ %
North's Automatic Blind Fixtures, No. 2, for Wood, $10.50; No. 3, for Brick, $13.50....dis 25&2 %

**Hoes.**

*Handled—*

Garden, Mortar, &c.... dis 65&5 %
Planter's, Cotton, &c.... dis 65&5 %
Warren Hoe.... dis 60 %
Magic.... ₱ doz $4.75

*Eye—*

D. & H. Scovil.... dis 20 %
Lane's Crescent Scovil Pattern.... dis 45 %
Lane's Crescent Planters Pattern.... dis 45 & 5 %
Lane's Razor Blade, Scovil Pattern.... dis 30 %
Maynard, S. & O. Pat.... dis 45&5 %
Sandusky Tool Co., " " .... dis 60 %
Hubbard & Co., " " .... dis 60 %
Bare " " .... dis 60 %
Grub.... dis 60 @ 60&10 %

**Hog Rings and Ringers.**

Hill's Improved Ringers.... ₱ doz. $4.50
Hill's Old Style Ringers.... ₱ doz. $3.00
Hill's Tongs.... ₱ doz, $4.50
Hill's Rings.... ₱ doz boxes, $2.25 @ 2.40
Perfect Rings.... ₱ doz boxes $1.75 @ 2.00
Perfect Ringers.... ₱ doz. $2.50
Blair's Hog Ringers.... ₱ doz. $1.60 @ $2.65
Blair's Hog Rings.... ₱ doz $0.60 @ 1.00
Champion Ringers.... ₱ doz $2.00
Champion Rings, Double.... ₱ doz, $2.25
Brown's Ringers.... ₱ doz, $2.00
Brown's Rings.... ₱ doz, $1.25 @ 1.50

**Hoisting Apparatus**

"Moore's" Hand Hoist, with Lock Brake.... dis 20 %
"Moore's" Differential Pulley Block.... dis 40 %

**Holders, File and Tool.**

Ralz Pat.... ₱ doz $4; dis 25 %
Nicholson File Holders.... dis 20 %

**Hollow-Ware.**

*Iron—*

Stove Hollow-Ware. Ground....dis 60&10@60&10&5 %
Stove Hollow-Ware. Unground....dis 70&5@70&10 %
Enameled and Tinned Hollow-Ware—
Kettles.... dis 70 @ 70&5 %
Oval Boilers, Saucepans & Glue Pots.... dis 40&5 @ 40&10 %
Gray Enameled Ware.... dis 40 @ 40&5 %
Agate and Granite Ware.... dis 25 %
Rustless Hollow-Ware.... dis 50 @ 50&5 %
Galvanized Tea-Kettles—

| Inch | 6 | 7 | 8 | 9 |
|---|---|---|---|---|
| Each | 55¢ | 60¢ | 65¢ | 75¢ |

*Silver Plated*—4 mo. or 5 % cash in 30 days.

Reed & Barton.... dis 40&5 %
Meriden Brittania Co.... dis 40&5 %
Simpson, Hall, Miller & Co.... dis 40&5 %
Rogers & Brother.... dis 40&5 %
Hartford Silver Plate Co.... dis 40&5&5 %
William Rogers Mfg. Co.... dis 40&5&5 %

**Hooks.**

*Cast Iron—*

Bird Cage. Sargent's list.... dis 60&10&10%
Bird Cage. Reading.... dis 60&10&10 %
Clothes Line, Sargent's list.... dis 60&10&10 %
Clothes Line, Reading list. dis 60&10 @ 60&10&10 %
Ceiling, Sargent's list.... dis55&10&10 %
Harness, Reading list.... dis 55&10 @ 55&10&10 %
Coat and Hat, Sargent's list.... dis 55&10 @ 60&10 %
Coat and Hat, Reading.... dis 50&10 @ 50&10&10 %

*Wrought Iron—*

Cotton.... ₱ doz $1.25
Cotton Pat. (N. Y. Mallet & Handle W'ks).... dis 30 %
Tassel and Picture (T. & S. Mfg. Co.).... dis 50 %
Wrought Staples, Hooks, &c.... See Wrought Goods
Bench Hooks.... See Bench Stops

*Wire—*

Wire Coat and Hat, Gem, list April, 1886.... dis 45
Wire Coat and Hat Miles', list April, 1886.... dis 45
Indestructible Coat and Hat.... dis. 45 %
Wire Coat and Hat, Standard.... dis 45 %
Belt.... dis 75&10 @ 80 %
Grass.... ₱ doz $2.00
Bush.... dis 55 @ 60 %
Whiffletree—Patent.... dis 55 %
Hooks and Eyes—Malleable Iron.... dis 70 @ 70&10 %
Hooks and Eyes—Brass.... dis 60&10&10 %
Fish Hooks, American.... dis 50 %

**Horse Nails.**

| | Nos. 6 | 7 | 8 | 9 | 10 | |
|---|---|---|---|---|---|---|
| Ausable | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | dis 25&10@25&10&10 % |
| Clinton. Fin | 24¢ | 22¢ | 21¢ | 20¢ | 19¢ | dis 40&10 @ 50 % |
| Essex | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | dis 25&10@25&10&10 |
| Lyra | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 10&10&5&5 |
| Snowden | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 12½&5&5@50 % |
| Putnam | 24¢ | 22¢ | 21¢ | 20¢ | 19¢ | dis 5&10&5½&2½ % |
| Vulcan | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 12½&5 |
| Northwest'n | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 10&10&5&5 |
| Globe | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 12½&5&5 |
| A. C. | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 25&10 @ 33⅓&5 % |
| C. B.-K. | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 25&10 @ 33⅓&5 |
| Champlain | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | dis25&10&10 % |
| New Haven | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | dis25&10@25&10&10 % |
| Saranac | 25¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 30&10 % |
| Champion | 25¢ | 23¢ | 22¢ | 21¢ | 20¢ | dis 10&10&10 |
| Capewell | 28¢ | 26¢ | 25¢ | 24¢ | 23¢ | dis 35&5 @ 35&10 |
| Star | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 40&10@10&12½ % |
| Anchor | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 35 % |
| Western | 23¢ | 21¢ | 20¢ | 19¢ | 18¢ | dis 40&10 % |
| Empire Bronzed | | | | | | 14 per lb. |

**Horse Shoes.**—See Shoes, Horse.

**Hose, Rubber**, competition....75&10 @ 75&10&5 %
Standard.... dis 70&7 &10 %
Extra.... dis 60 @ 60&10 %
N. Y. B. & P. Co., Para.... dis 30&10 %
N. Y. B. & P. Co., Extra.... dis 50 %
N. Y. B. & P. Co., Dundee.... dis 60&10&5 %

**Huskers.**

Blair's Adjustable.... ₱ gross $8.00
Blair's Adjustable Clipper.... ₱ gross 7.00

**Ice Picks, Chisels, &c.**

Am. Ice Chisel Pol'd. ....₱ doz $3.00, dis 20@20&5 %
National Ice Chisel.... ₱ doz $6.25, dis 20 %
Novelty Ice Breakers.... ₱ doz $6.25, dis 20 %
Dunlap's Ring Picks.... ₱ doz $2.00, dis 15 %
Wood Head Picks, Sargent's....₱ doz $1.60, dis 50&10 %
Iron Head Picks, Sargent's....₱ doz $1.25, dis 50&10 %
Ice Mallets, Pick in handle.... ₱ doz $2.00, dis 15 %
Ice Axes, Small Cast or Mail...₱ doz $1.25, dis 20&10 %
Combination Ice Tools.... ₱ doz $2.00 net
Acme Ice Pick and Tongs...₱ gross $55.00, dis 50&10 %
Roger's Lightning Ice Chisel.... ₱ gross $28.50

**Ice Tongs.**

Champion, S. S. & Co.... ₱ doz $4.00, dis 25&10 %
Family.... ₱ doz $2.75, dis 20@25 %

**Jack Screws.**—See Screws.

**Kettles.**

| | Spun. | Stamped. |
|---|---|---|
| Brass, 7 to 17 in., ₱ ₱ | 24¢ | 21¢ |
| Brass larger than 17 inches, ₱ ₱ | 26¢ | 23½¢ |
| Enameled and Tea Kettles.... | See Hollow-Ware | |

**Keys.**

Lock Asso'n list Dec. 30, 1886....dis 50&10 @ 60&5 %
Eagle, Cabinet, Trunk and Padlock.... dis 33⅓&2 %
Hotchkiss' Brass Blanks.... dis 40 %
Hotchkiss' Copper and Tinned.... dis 40 %
Hotchkiss' Padlock and Cabinet.... dis 35 %
Ratchet Bed Keys.... ₱ doz $4.00, dis 15 %

**Knife Sharpeners.**

Parkin's Applewood Handles.... ₱ doz $6.00, dis 40 %
Parkin's Rosewood or Cocobolo... ₱ doz $9.00, dis 40 %

**Knives.**

Wilson's Butcher Knives.... dis 20 @ 25 %
Ames' Butcher Knives.... dis 25 %
Nichols' Butcher Knives.... dis 40&10
Ames' Shoe Knives.... dis 20@25 %
Ames' Bread Knives.... ₱ doz $1.50, dis 15 @ 20 %
Moran's Shoe and Bread Knives.... dis 20 %
Hay and Straw.... See Hay Knives
Table and Pocket.... See Cutlery

**Knobs.**

Door Mineral.... 65@68¢
Door Por. Jap'd.... 75@78¢
Door Por. Por. Nickel.... $2.00 @ 2.25
Door Por. Plated, Nickel.... $2.00 @ 2.25
Drawer, Porcelain.... dis 55&10&10@6. &10&10 %
Hematite Door Knobs, new list.... dis 40&10@50 %
Yale & Towne Wood Knobs, list Dec., 1885.... d's 40 %
Furniture Plain.... 75¢ gross inch. dis 10 %
Furniture, Wood Screws.... dis 25&10 %
Base, Rubber Tip.... dis 70&10&5 %
Picture, Judd's.... dis 60&10&10 @ 70 %
Picture, Sargent's.... dis 70&10 %
Picture, Hemacite.... dis 35&5 %
Shutter, Porcelain.... dis 65&10 %
Carriage, Japanned.... ₱ gross 80¢, dis 60&10 %

**Ladles.**

Melting, Sargent's.... dis 55&10 %
Melting, Reading.... dis 35&10%
Melting, Monroe's Patent.... ₱ doz. $4.00, dis 40%
Melting, P. S. & W.... dis 35&10 @ 40%
Melting, Warner's.... dis 30%

**Lawn Mowers.**

Standard List.... dis 50&10 %
Enterprise.... dis 60&10 %

**Lanterns.**

Tubular, Plain with Guards.... ₱ doz $4.00 @ $4.25
Tubular, Lift Wire, with Guards.... ₱ doz $4.50 @ $4.75
Tubular, Square Plain with Guards, ₱ doz $4.00 @ $4.25
Tubular, Sq Lift Wire with Guards, ₱ doz $4.25 @ $4.50
Without Guards, 25¢ ₱ dozen less.
Police, Small, $6.00; Med. $7.25; Large, $9.75, dis 20@25¢

**Lemon Squeezers.**

Porcelain Lined, No. 1.... ₱ doz. $6.00, dis 25&30 %
Wood, No. 2.... ₱ doz. $3.00, dis 35 %
Wood, Common.... ₱ doz $1.70 @ 1.75
Dunlap's Improved.... ₱ doz. $3.75, dis 20 %
Jammis'.....No. 1, $5; 2, $9; 12, $18 ₱ doz. dis 25&10 %
Jennings' "Star".... ₱ doz $2.50
The "Boss".... ₱ doz $2.50
Dean's.....Nos. 1, ₱ doz $6.50; 2, $3.35; 3, $1.90
Little Giant.... dis 50 @ 50&5 %
King.... dis 40&5 %

**Lines.**

Cotton and Linen Fish, Draper's.... dis 50 %
Draper's Chalk.... dis 60 %
Draper's Mason's Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.... dis 25 %
Cotton Chalk.... dis 55 %
Samson, Cotton, No. 4, $3; No. 4½, $3.50.... dis 10 %
Silver Lake, Braided, Nos. 0, $6.00 No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ₱ gross.... dis 25 %
Masons' Linen, No. 3½, $1.50; No. 4, $2; No. 4½, $2.50
Masons' Colored Cotton.... dis 45
Wire Clothes, No. 18, $3.60; No 19, $3.00; No. 20, $2.50.
Ventilator Cord, Samson Braided, White or Drab Cotton.... $7.50 ₱ doz. dis 20%

**Locks, Padlocks, Cabinet Locks, &c.**

*Door Locks, Latches, &c.—*

List, Dec. 30, '86, chgd Feb. 2, '87...dis 50&10 @ 60&5 %
*Note.*—Lower net prices often made.
Mallory, Wheeler Co., list, July, 1888..dis 50&10&2 %
Sargent & Co. (list Aug. 1, 1888).... dis 55&2&10 %
Reading Hardware Co. (list Feb. 2, '88).dis 55@60&10 %
Livingston & Co.... dis 70 %
Perkins' Burglar Proof.... dis 60&25 %
Plate.... dis 33⅓&2 %
F. Many's "Extension Cylinder".... $10.50 ₱ doz
Barnes Mfg. Co.... dis 40 %
Yale Corrugated Key.... dis 33⅓ %
Yale.... dis 33⅓ %
Romer's.... dis 25 %

*Cabinet—*

Eagle, Gaylord Parker and Corbin, } List March, '84, revised Jan. 1, '85. dis 33⅓&2 %
Deitz, Nos. 36 to 39.... dis 40 %
Deitz, Nos. 51 to 63.... dis 40 &10 %
Dietz, Nos. 86 to 96.... dis 30 %
Stoddard Lock Co.... dis 30 @ 33⅓ %
"Champion" Night Latches.... dis 40 %
Barnes Mfg. Co.... dis 40 %
Eagle and Corbin Trunk.... dis 25&10
"Champion" Cabinet and Combination.... dis 33⅓ %
Yale.... dis 33⅓ %
Romer's.... dis 25 %

*Padlocks—*

List, Dec. 23, 84.... dis 75 @ 75&10 %
Yale Lock Mfg. Co.'s.... dis 33⅓ %
Eagle.... dis 25&2 %
Eureka, Eagle Lock Co.... dis 40&2 %
Romer's, Nos. 0 to 91.... dis 30 %
Romer's Scandinavian, &c, Nos. 100 to 505.... dis 15 %
A. E. Dietz.... dis 40 %
"Champion" Padlocks.... dis 40 %
Hotchkiss.... dis 30 %
"Star".... dis 45 %
"Horse Shoe," ₱ doz.. $9.... dis 40 %
Barnes Mfg. Co.... dis 40 %
Stock's.... dis 30 %
Brown's Patent.... dis 25 %
Scandinavian.... dis 90 @ 90&10 %
Fraim's Pat. Scandinavian new list (low).... dis 60 %

**Lumber Tools.**

Ring Peavies, "Blue Line" Finish.... ₱ doz $20.00
Ring Peaves, Common Finish.... ₱ doz $18.00
Steel Socket Peavies.... ₱ doz $21.00
Mall. Iron Socket Peavies.... ₱ doz $19.00
Cant Hooks, "Blue Line" Finish.... ₱ doz $16.00
Cant Hooks, Common Finish.... ₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish.... ₱ doz $16.00
Cant Hooks, Mall. Socket Clasp Common Finish.... ₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Fin. ₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish.. ₱ doz $12.00
Sand Spikes.... ₱ doz 6 ft., $15.00; 8 ft., $20
Pike Poles, Pike or Hook, 12 ft. 14 ft. 16 ft. 18 ft. 20 ft. 22 ft.
₱ doz.... $11.50 12.50 14.50 17.50 21.50
Pike Poles, Pike only, ₱ doz.... 10.00 11.00 13.00 16.00 20.00
Pike Poles not Ironed, ₱ doz.... 6.00 7.00 9.00 12.00 16.0
Setting Poles, ₱ doz.... 14.00 15.00 17.00
Swamp Hooks.... ₱ doz $18.00
Landing Blocks.... ₱ doz $22.50
Bridding Tongs.... ₱ doz $51.00
Log Binders.... ₱ doz $26.00
Bended Boot Calks, 1 to 5 M, dis 25 %; 5 to 10 M, dis 30 %
Square Steel Boot Calks.... dis 40 %
Chain Rafting Dogs.... ₱ 100 $12.50
Ring Rafting Dogs...₱ 100, med., $10.00; large, $12.00
Timber Grapples.... ₱ doz $30.00

**Lustro.**

Four-ounce Bottles.... ₱ doz. $1.75 ₱ gro. $17.00

**Mallets.**

Hickory.... dis 20&10@20&10&10 %
Lignumvitæ.... dis 20&10@20&10&10 %
B. & L. Block Co., Hickory and L. V....dis 30 @ 30&10

**Match Safes.**

Dangerfield's Self-Igniting.... ₱ doz $1.25

**Mattocks.**—Regular list....dis 60&10 @ 60&10&5

**Meat Cutters**

| Dixon's—Nos. | 1 | 2 | 3 | 4 | |
|---|---|---|---|---|---|
| ₱ doz | $14.00 | 17.00 | 19.00 | 30.00 | dis 45 % |
| Woodruff's | | Nos. | 100 | 150 | |
| | ₱ doz. | $15.00 | 18.00 | | dis 45 |
| Champion | Nos. | 200 | 300 | 400 | |
| | ₱ doz. | $22.00 | 27.00 | 40.00 | dis 45 |
| Hales' Pattern | Nos. 11 | 12 | 13 | | |
| | ₱ doz... | $27.00 | 33.00 | 45.00 | dis 70 & 70&5 % |

American.... dis

| Nos. | 1 | 2 | 3 | 4B |
|---|---|---|---|---|
| Each | $5.00 | 7.00 | 10.00 | 25.00 | 50.00 | 60.00 |

Enterprise.... dis 30

| Nos. | 10 | 12 | 22 | 32 | 42 |
|---|---|---|---|---|---|
| Each | $3. | 2.50 | 4.00 | 6 00 | 15 00 |

Pennsylvania.....dis 40&10%
Nos. 1 2 3 00
₩ doz. $24.00 28.00 36.00 28.00
Miles' Challenge..Nos. 1 2
₩ doz..$22.00 30.00 40.00—dis 45@45&10 %
Home No. 1.....$26 ₩ doz, dis 55&10 %
Draw Cut..Nos. 5 3 2 1
Each...$50.00 75.00 80.00 225.00—dis 20 @ 25 %
Beef Shavers (Enterprise Mfg. Co.)...dis 20&10 @ 30 %
Chadborn's Smoked Beef Cutter.....₩ doz, $66.00

**Mincing Knives.**
Am. (2d quality), ₩ gro, 1 blade, $7; 2 blades, $12; 3 blades, $18.....net
Lothrop's.....dis 20&10 %
Smith's, ₩ doz, Single, $2.00; Double, $3....dis 40@45 %
Knapp & Cowles.....dis 50&10@60 %
Buffalo Adjustable.....₩ doz $3.00, dis 25 %

**Molasses Gates.**—Stebbins' Pat..dis 70@70 & 7½ %
Stebbins' Genuine.....dis 60&10&10 %
Stebbins' Tinned Ends.....dis 40&10 %
Chase's Hard Metal.....dis 50&10 %
Bush's.....dis 20 %
Lincoln's Pattern.....dis 70 @ 70&10 %
Weed's.....dis 20&10 %
Goss Nos.. 1 2 3 4
$7.00 8.00 9.00 10.00. ₩ doz, dis 60&10&10 %

**Money Drawers.**—₩ doz., $18 @ $20.

**Muzzles.**—Safety, ₩ doz. $3.....dis 25 %

**Nails**.....See Trade Report
Wire Nails & Brads, list July 14, '87...dis 70&10 %
Wire Nails, Standard Penny.....₩ keg, $2.60 @ $2.70

**Nail Puller.**—Curtiss Hammer...₩ doz $9.00 net
Giant, No. 1.....₩ doz $30.00, dis 10 %
Pelican.....₩ doz $9.00, dis 25 %
Boss.....₩ doz $30, dis 30 %

**Nail Sets.**—Square.....₩ gro., $4.00 @ $4.25
Round.....₩ gro., $3.25
Cannon's Diamond Point.....₩ gro. $12 dis 20 %

**Nut Crackers.**
Table (Humason & Beckley Mfg. Co.).....dis 40 %
Blake's pattern.....₩ doz $2.00, dis 10 %
Turner & Seymour Mfg. Co.....dis 50 %

**Nuts.**
Nuts, all kinds, 5½¢ off list Jan. 1, 1888.
In lots less than 100 ℔, ₩ ℔, add ½¢, 1 ℔ boxes add 1¢ to list.

**Oakum.**
Government.....₩ ℔ 8¢
U. S. Navy.....₩ ℔ 7¢
Navy.....₩ ℔ 6¢ @ 6½¢

**Oilers.**—Zinc and Tin.....dis 65 @ 65&10 %
Brass and Copper.....dis 50&10&50&10&5 %
Malleable, Hammers' Improved, No 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₩ doz.....dis 10 @ 10&10 %
Malleable, Hammers, Old Pattern, same list...dis 40 %
Prior's Patent or "Paragon" Zinc.....dis 60&10&10 %
Prior's Patent or "Paragon" Brass.....dis 50 %
Dimstead's Tin and Zinc.....dis 60 %
Dimstead's Brass and Copper.....dis 50 %
Broughton's Zinc.....dis 60 %
Broughton's Brass.....dis 50 %

**Packing, Steam.**

*Rubber—*
Standard.....dis 60&10 @ 60&10&10 %
Extra.....dis 50&10 @ 60 %
N. Y. R. & P.Co., Standard.....dis 50&10&5 %
N. Y. R. & P. Co., Empire.....dis 70 %
N. Y. R. & P. Co., Salamander.....₩ ℔ 65¢, dis 30 %
Jenkins' Standard.....₩ ℔ 80¢, dis 35 %

*Miscellaneous—*
American Packing.....10¢ @ 11¢ ₩ ℔
Russia Packing.....14¢ ₩ ℔
Italian Packing.....13 @ 14¢ ₩ ℔
Cotton Packing.....15 @ 17¢ ₩ ℔
Jute.....7 @ 8¢ ₩ ℔

**Padlocks.**—See Locks.

**Pails.**
*Galvanized Iron—*
Quarts..... 10 12 14
Hill's Light Weight, ₩ doz.....$2.75 3.00 3.25
Hill's Heavy Weight, ₩ doz.....3.00 3.25 3.75
Whiting's.....2.75 3.00 3.25
Sidney Shepard & Co.....2.80 .... 3.40
Iron Clad.....2.75 3.00 3.25
Fire Buckets.....2.75 3.25 3.50
Buckets, see Well Buckets

*Indurated Fibre Ware—*
Star Pails, 12 qt.....₩ doz $4.50
Fire Stable and Milk, 14 qt.....₩ doz $5.50

**Pencils.** Faber's Carpenters'.....high list, dis 50 %
Faber's Round Gilt.....₩ gro $5.25 net
Dixon's Lead.....₩ gro $4.50 net
Dixon's Lumber.....₩ gro $6.75 net
Dixon's Carpenters'.....dis 40&10 %

**Picks.**
Railroad, 5 to 6, $12.00; 6 to 7, $13, dis 60&10@60&10&5 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13, dis 60&10@60&10&5 %

**Picture Nails.**
Brass Head, Sargent's list.....dis 50&10&10 %
Brass Head, Combination list.....dis 50&10 %
Porcelain Head, Sargent's list.....dis 50&10&10 %
Porcelain Head, Combination list.....dis 40&10 %
Wiles' Patent.....dis 40 %

**Pinking Irons.**.....₩ doz 65¢ net

**Pipe, Wrought Iron.**—List March 23, 1887.
1¼ and under, Plain.....dis 55 %
1¼ and under Galvanized.....dis 47½ %
1¼ and over, Plain.....dis 65 %
1¼ and over, Galvanized.....dis 55 %
Boiler Tubes, Iron.....dis 65 %

**Planes and Plane Irons.**
*Wood Planes—*
Molding.....dis 50&5 @ 50&10 %
Bench, First Quality.....dis 50&10 @ 60 %
Bench, Second Quality.....dis 60&10 @ 60&10&5 %
Bailey's (Stanley R. & L. Co.).....dis 30&10 %
*Iron Planes—*
Bailey's (Stanley R. & L. Co.)...dis 30&10@30&10&5 %
Miscellaneous Planes (Stanley R. & L. Co.)...dis 20&10 %
Victor Planes (Stanley R. & L. Co.)....dis 20& 10 %
Steer's Iron Planes.....dis 35 @ 35&5 %
Meriden Mal. Iron Co.'s.....dis 30&10@30&10&10 %
Davis's Iron Planes.....dis 30&10@30&10&10 %
Birmingham Plane Co.....dis 50@50&5 %
Gage Tool Co.'s Self Setting.....dis 2 %
Chaplin's Iron Planes.....dis 40 @ 40 5 %
Sargent's.....dis 30&10 @ 30&10&10 %
*Plane Irons—*
Plane Irons.....dis 20&10 %
Plane Irons, Butcher's.....$5.00 @ $5.25 to £
Plane Irons, Buck Bros.....dis 30 %
Plane Irons, Auburn Tool Co., "Thistle".....dis 40 %
Plane Irons, Middlesex Mfg. Co., "Baldwin Iron," Single and Cut.....dis 20 @ 25 %
Double.....dis 33⅓ @ 40 %
L. & I. J. White.....dis 25 %

**Pliers and Nippers.**
Sutton's Patent.....dis 30&10 @ 40 %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₩ doz dis 20&10@33⅓ %
Humason & Beckley Mfg. Co.....dis 50&50&10 %
Gas Pliers.....dis 60 %
Gas Pliers, Custer's Nickel Plated.....dis 60&5 %
Eureka Pliers and Nippers.....dis 40 %
Russell's Parallel.....dis 25 %
P. S & W. Cast Steel.....dis 50 %
P. S. & W. Tinners' Cutting Nippers....add 6 % dis 10 %
Carew's Pat. Wire Cutters.....dis 20 %
Morrill's Parallel, per doz., $12.....dis 30&5 %
Cronk's 8 in., $15; 10 in., $21.....dis 40 @ 40&5 %

**Plumbs and Levels.**
Regular List.....dis 70&10@70&10&10 %
Disston's.....dis 45&10 %
Pocket Levels.....dis 70&10@70&10&10 %
Davis Iron Levels.....dis 30 %
Davis' Inclinometers.....dis 10&10 %

**Poppers, Corn.**
Round or Square, 1 qt.....₩ gro $12 @ $15
Round or Square, 2 qt.....₩ gro $25 @ $26

**Post Hole and Tree Augers and Diggers.**
Samson Post Hole Digger.....₩ doz $36.00, dis 25&10 %
Fletcher Post Hole Augers.....₩ doz $36.00, dis 20 %
Eureka Diggers.....₩ doz $16 @ $17
Leed's.....₩ doz $8.00 @ $9.00
Vaughan's Post Hole Auger, per doz....$13 00 @ $14.00
Kohler's Little Giant.....₩ doz $18.00
Kohler's Hercules.....₩ doz $15.00
Kohler's New Champion.....₩ doz $9.00
Schneidler.....₩ doz $18
Ryan's Post Hole Diggers.....₩ doz $24
Cronk's Post Bars.....doz $80, dis 50&5 @ 50&10 %
Gibb's Post Hole Digger, ₩ doz $30....dis 40 @ 40&10 %

**Potato Parers.**
White Mountain.....₩ doz $5.00 @ 5.50
Antrim Combination.....₩ doz $8.00
Hoosier.....₩ doz $13.50

**Pruning Hooks and Shears.**
Disston's Combined Pruning Hook and Saw, ₩ doz $18.00.....dis 20&10 %
Disston's Pruning Hook.....₩ doz $12.00, dis 20&10 %
E. S. Lee & Co.'s Pruning Tools.....dis 40 %
Pruning Shears, Henry's Pat...₩ doz $3.75 @ $4.00 net
Henry's Pruning Shears.....₩ doz $4.25 @ $4.50 net
Wheeler, M. & Co.'s Combination...₩ doz $12, dis 20 %
Dunlap's Saw and Chisel.....₩ doz $8.50, dis 30 %
J. Mallinson & Co.....No. 1, $5.25; No. 2, $7.25

**Pulleys.**—Hot House, Awning, &c.....dis 60&10 %
Japanned Screw.....dis 60&10 %
Brass Screw.....dis 60&10 %
Japanned Side.....dis 60&10&10 %
Japanned Clothes Line.....dis 60&10 %
Empire Sash Pulley.....dis 55 @ 60 %
Moore's Sash, Anti Friction.....dis 50 %
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 (@ 50&10&5 %
Hay Fork, "Anti-Friction," 5 in. Solid, $5.70...dis 50 %
Hay Fork, "F" Common and Pat. Bushed.....dis 20 %
Hay Fork, Tarbox Pat. Iron.....dis 20 %
Hay Fork, Reed's Self-Lubricating.....dis 60 %
Shade Rack.....dis 45 %
Tackle Blocks.....See Blocks

**Pumps.**—Cistern, Best Makers.....dis 50 @ 10&60 %
Pitcher Spout, Best Makers...dis 60&10 @ 60&10&10 %
Pitcher Spout, Cheaper Goods..dis 70&5 @ 70&10&5 %

**Punches.**
Saddlers' or Drive, good quality.....₩ doz 60¢ @ 65¢
Bemis & Call Co.'s Cast Steel Drive.....dis 50&5 %
Bemis & Call Co.'s Springfield Socket.....dis 60&5 %
Spring, good quality.....₩ doz $2.50 @ $2.60
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid Tinners'.....₩ doz $1.44, dis 55 %
Tinners Hollow Punches.....dis 20&2 %
Rice Hand Punches.....dis 15 %

**Rail.**
Sliding Door, Wrt. Brass, ₩ ℔ 35¢.....dis 15 %
Sliding Door, Bronzed Wrt. Iron.....₩ foot 7¢
Sliding Door Iron, Painted....₩ foot 4¢, dis 20&10&5 %
Barn Door, Light....Inch. ½ ⅝ ¾
Per 100 feet..... $2.50 3.00 4.40—dis 10 %
9 ℔ for N. E. Hangers—
Small. Med. Large
Per 100 feet..... $2.15 2.70 3.25 net
Terry's Wrought Iron, ₩ foot.....4½¢ @ 5¢
Victor Track Rail, 7¢ ₩ foot.....dis 50&2 %
Carrick Steel Rail, per foot.....4½¢

**Rasps.**
Cast Steel, Association goods.....dis
Cast Steel, outside goods.....dis 60&10 @ 70 %
Malleable.....dis 70 @ 70&5 %
Gibbs Lawn Rake.....$12, dis 40 %
Canton Lawn Rake.....$9, dis 40 %
Ft. Madison Prize Bow Brace and Peerless..dis 65&5 %
Fort Madison Steel Tooth Lawn Rake, $6.....dis 25 %

**Razors.**—J. R. Torrey Razor Co.....dis 20%
Wostenholme and Butcher.....$10 to £, dis 10 %

**Razor Strops.**
Genuine Emerson.....dis 60 @ 60&5 %
Imitation Emerson.....₩ doz $2.00, dis 20&10&5 %
Torrey's.....dis 20 %
Badger's Belt and Combination.....₩ doz $2
Lamont Combination.....₩ doz $4

**Rivets and Burrs.**
Copper.....dis 50 @ 50&10 %
Iron, list November 17, 1887.....dis 50 @ 50&7½ %

**Rivet Sets.**.....dis 50&2 @ 50&10 %

**Rods.**—Stair, brass.....dis 20&2 %
Stair Black Walnut.....₩ doz 40¢

**Rollers.**
Barn Door, Sargent's list.....dis 60&10&10 %
Acme (Anti-Friction).....dis 55 %
Union Barn Door Roller.....dis 70 %

**Rope.**—Manufacturers' prices for large lots.
Manila.....⅜ inch and larger ₩ ℔ 11¼¢ net
Manila.....⅜ inch ₩ ℔ 11¾¢ net
Manila.....¼ and 5-16 inch ₩ ℔ 12¼¢ net
Manila Tarred Rope.....₩ ℔ 10¾¢ net
Manila, Hay Rope.....₩ ℔ 11¼¢ net
Sisal.....½ inch and larger ₩ ℔ 9¼¢ net
Sisal.....⅜ inch ₩ ℔ 9¾¢ net
Sisal.....¼ and 5-16 inch ₩ ℔ 10¼¢ net
Sisal, Hay Rope.....₩ ℔ 9¼¢ net
Sisal, Tarred Rope.....₩ ℔ 8¾¢ net
Sisal, Medium Lath Yarn.....₩ ℔ 8¼¢ net
Cotton Rope.....₩ ℔ 15 @ 18¢ net
Jute Rope.....₩ ℔ 7¢
(1½% for cash in 10 days.)

**Rules.**
Boxwood.....dis 80&10 @ 80&10&10 %
Ivory.....dis 50 @ 50&10 %
Starrett's Rules and Straight Edges, Steel..dis 25&10 %

**Saw Irons.**
From 4 to 10, at factory.....₩ 100 ℔ $2.40 @ $2.55
Self-Heating.....₩ doz. $9.00 net
Self Heating, Tailors'.....₩ doz. $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Potts's Irons.....dis 40@40&5 %
Enterprise Star Irons, new list, July 20, 1882....dis 40 %
Combined Fluter and Sad Iron...₩ doz. $15.00, dis 15 %
Fox Reversible, Self Fluter.....₩ doz., $24.00 net
Chinese Laundry (N. E. Butt Co.).....85¢, dis 15 %
New England.....50¢, dis 15 %
Mahony's Troy Pol. Irons.....dis 25%
Sensible.....dis 20 @ 20&5 %

**Sand and Emery Paper and Cloth.**
List April 19, 1886.....dis 20@20&5 %
Sibley's Emery and Crocus Cloth.....dis 30 %

**Sash Cord.**
Common.....₩ ℔, 10¢ @ 11¢
Patent, good quality.....₩ ℔, 13¢ @ 13½¢
White Cotton Braided, fair quality.....₩ ℔ 28¢ @ 29¢
Common Russia Sash.....₩ ℔ 13½¢
Patent " " .....₩ ℔ 15¢
Cable Laid Italian " .....₩ ℔ 22¢ @ 23¢
India Cable Laid " .....₩ ℔ 13¢
Silver Lake, A Quality, White.....50%, dis 10&10&5 %
Silver Lake, A Quality, Drab.....55%, dis 10&10&5 %
Silver Lake, B Quality, White.....50%, dis 20&10&5 %
Silver Lake, B Quality Drab.....50%, dis 20&10&5 %
Silver Lake, C Quality, White (only).....27¢ @ 28¢
Sylvan Spring, Extra Braided, White.....34¢
Sylvan Spring, Extra Braided, Drab.....32¢
Semper Idem, Braided, White.....30¢
Egyptian, India Hemp, Braided.....25¢
Samson, Braided, White Cotton...50¢ dis 30 @ 30&5 %
Samson, Braided, Drab Cotton.....55¢ dis 30 @ 30&5 %
Samson, Braided Italian Hemp....55¢ dis 30 @ 30&5 %
Samson Braided Linen.....80¢ dis 30 @ 30&5

**Sash Locks.**
Clark's No. 1, $10.00; No. 2, $8.00 ₩ gross.....dis 33⅓ %
Ferguson's.....dis 33⅓ %
Morris and Triumph, list Aug. 16, 1886.....dis 60&2 %
Victor.....60&10&2 %
Walker.....dis 10 %
Attwell Mfg. Co.....dis 25 @ 33⅓ %
Reading.....dis 66⅔&10 @ 66⅔&10&10 %
Hammond's Window Springs.....dis 40 %
Common Sense, Jap d. Cop'd and Br'sed..₩ gross $4.00
Common Sense, Nickel Plated.....₩ gross $10.00
Universal.....dis 30 %
Kempshall's Gravity.....dis 60 %
Kempshall's Model.....dis 60@60&10 %
Corbin's Daisy, list February 15, 1886.....dis 70 %
Payson's Perfect.....dis 60 @ 60&10 %
Hugunin's New and Improved Adjustable Sash Balances, list Jan. 5, 1887.....dis 25&2&2 %
Hugunin's New Sash Locks, list Jan. 5, '87, dis 25&5&2 %
Stoddard "Practical".....dis 10 %
Ives Patent.....dis 40 %
Lieschе's Nos. 100 & 110, ₩ gro. $8: 105, $10, dis 20&10 %
Davis, Bronze, Barnes Mfg. Co.....dis 50 %
Champion Safety, List March 1, 1888....dis 55&5&5 %
Security.....dis 70%

**Sash Weights.**
Solid Eyes.....₩ ton. $22

**Sausage Stuffers or Fillers.**
Miles' "Challenge".....₩ doz. $20, dis 50@50&5 %
Perry.....₩ doz. No. 1, $15: No. 0, $21, dis 50@50&5 %
Draw Cut No. 4.....each, $30.00, dis 20 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Silver's.....dis 40&10 %

**Saws.**
Disston's Circular....dis 45@45&5 %) Extras some
Disston's Cross Cuts..dis 45@45&5 %) times given by
Disston's Hand.....dis 25@25&5 %) jobbers.
Atkins' Circular.....dis 50 %
Atkins' Silver Steel Diamond X Cuts.....₩ foot 70¢
Atkins' Special Steel Dexter X Cuts.....₩ foot 50¢
Atkins' Special Steel Diamond X Cuts.....₩ foot 30¢
Atkins' Champion and Electric Tooth X Cuts.....₩ foot 27 @ 28¢
Atkins' Hollow Back X Cuts.....₩ foot 18¢
Atkins' Shingle, Mulay, Drag, &c.....dis 45 %
W. M. & C., Hand.....dis 30&5 @ 30&10 %
W. M. & C. Champion X Cuts, Regular ₩ foot .24@26¢
W. M. & C. X Cuts, Thin Back.....₩ foot 27@29¢
Peace Circular and Mill.....dis 45&10 %
Peace Hand Panel and Rip....dis 20&10 @ 20&10&10 %
Peace Cross Cuts, Standard.....₩ foot 25¢
Peace Cross Cuts, Thin Back.....₩ foot 27@28¢
Richardson's Circular and Mill.....dis 45 @ 45&10 %
Richardson's X-Cuts, No. 1, 30¢; No. 2, 27¢; No. 3, 24¢
*Hack Saws—*
Griffin's Hack Saws, complete.....dis 40&10 @ 50 %
Griffin's Hack Saw, Blades only.....dis 40&10 @ 50 %
Star Hack Saws and Blades.....dis 25 %
Diamond Hack Saws and Blades.....dis 25 %
Eureka and Crescent.....dis 25 %

**Saw Frames.**
White Vermont.....₩ gro $9 @ $10
Red, Polished, and Varnished....₩ doz $1.50, dis 25 %

**Saw Sets.**
Stillman's Genuine...₩ doz $5.00 and $7.75, dis 40&5 %
Stillman's Imita..₩ doz $3.25 and $5.25, dis 40&5@40&10%
Common Lever.....₩ doz $2.00, dis 40&5 %
Morrill's No. 1, $15.00; Nos. 3 & 4, $24....dis 40&10@50%
Leach's.....No. 0, $8.00; No. 1, $15.00, dis 15 @ 20 %
Nash's.....dis 20&10 @ 20&10&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent....dis 30&5 %
Bemis & Call Co.'s Lever and Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate.....dis 10 %
Bemis & Call Co.'s Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00, dis 50&10 %
Aiken's Imitation.....$7.00, dis 50&5 %
Hart's Patent Lever.....dis 20 %
Disston's, Star, No. 15, $5.50, dis 20&10@20&10&10 %
Atkins' Lever.....per doz No. 1, $6.00; No. 2, $9.60
Atkins' Criterion.....per doz $7.50
Croissant (Keller), No. 1, $15.00; No. 2, $24.00...dis 40&10 %

**Saw Tools.**
Atkins Perfection....$15.00; Excelsior $6.00 ₩ doz

**Scales.**
Hatch, Counter, No. 171, good quality.....₩ doz $21
Hatch, Tea, No. 161.....₩ doz $6.75 @ $7.00
Union Platform, Plain.....$2.10 @ $2.20
Union Platform, Striped.....$2.20 @ 2.30
Chatillon's Grocers' Trip Scales.....dis 50 %
Chatillon's Eureka.....dis 25 %
Chatillon's Favorite.....dis 40 %
Family, Turnbull's.....dis 30@30&10

**Scale Beams.**
Scale Beams List of Jan. 12, 82..dis 50&10@50&10&5 %
Chatillon's No. 1.....dis 40 %
Chatillon's No. 2.....dis 50 %

**Scrapers.**
Adjustable Box Scraper (S. R. & L. Co.) $6.50, dis 30&10 %
Box, 1 Handle.....₩ doz $4.00, dis 10 %
Box, 2 Handle.....₩ doz $6.00, dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 50&10@60 %
Ship, Common.....₩ doz $3.50 net
Ship, Providence Tool Co.....dis 10 %

**Screen Window and Door Frames.**
Porter's Pat. Window and Door Frame...dis 33⅓&10 %
Screen Corner Irons, Warner's....dis 33⅓ @ 33⅓&10 %
Stearns' Frames and Corners.....dis 25 @ 25&10 %

**Screw Drivers.**
Douglas Mfg Co.....dis 20&10&10 %
Disston's.....dis 45&10 %
Disston's Patent Excelsior.....dis 45&10 %
Buck Bros.....dis 30 %
Stanley R. & L. Co.'s Varnished Handles....dis 65&10 %
Stanley R. & L. Co.'s Black Handles.....dis 60&10 %
Sargent & Co.'s No. 1 Forged Blade....dis 60&10&10 %
Sargent & Co.'s Nos. 20, 40 and 60.....dis 66⅔&10&10 %
Knapp & Cowles' No. 1.....dis 60&20 @ 70 %
Knapp & Cowles' No. 1 Extra.....dis 60 @ 60&10 %
Knapp & Cowles' No. 00 & 4.....dis 50&5 @ 50&10&5 %
Stearns'.....dis 25&10&5 %
Gay & Parsons.....dis 35 %
Champion.....dis 25&10 %
Clark's Patent.....dis 30 @ 33⅓ %
Crawford's Adjustable.....dis 30 %
Ellrich's Socket and Ratchet.....dis 25 @ 25&10 %
Allard's Spiral, new list.....dis 25 %
Kolb's Common Sense.....₩ doz $6, dis 25&10

Syracuse Screw-Driver Bits.....dis 30 & 30&5 %
Screw Driver Bits.....₩ doz. 50¢ @ 75¢
Screw Driver Bits, Parr's.....₩ gro 6.25
Fray's Hol. Hdle. Sets, No. 3, $12.....dis. 25 @ 25 & 10 %
P. D. & Co.'s, all Steel.....dis 50 %

**Screws**

*Wood Screws*—List, Brass, Jan 27; Iron, July 1, 1887
Flat Head Iron.....dis 70 %
Round Head Iron.....dis 65 %
Flat Head Brass.....dis 65 %
Round Head Brass.....dis 60 %
Flat Head Bronze.....dis 65 %
Round Head Bronze.....dis 60 %
} Ex. 10 % often given by jobbers.

*Machine*—
Flat Head, Iron.....dis 55 %
Round Head, Iron.....dis 50 %

*Bench and Hand*—
Bench, Iron.....dis 55&10 @ 55&10&10 %
Bench, Wood, Beech.....₩ doz $2.25
Bench, Wood, Hickory.....dis 20&10 %
Hand, Wood.....dis 25&10 @ 25&10&5 %
Lag, Blunt Point.....dis 75 @ 75&10 %
Coach and Lag, Gimlet Point.....dis 75 %
Bed.....dis 25&5 %
Hand Rail, Sargent's.....dis 66⅔&10 %
Hand Rail, Humason, Beckley & Co.'s..dis 70&10@75 %
Hand Rail, Am. Screw Co.....dis 75 %
Jack Screws, Millers Falls list.....dis 50 @ 50&5 %
Jack Screws, P. S. & W.....dis 35 %
Jack Screws, Sargent.....dis 60&10 @ 60&10&5 %
Jack Screws, Stearns'.....dis 40 @ 40&10 %

**Scroll Saws.**

Lester, complete, $10.00.....dis 25 %
Rogers, complete, $4.00.....dis 25 %
Barnes' Builders' and Cabinet Makers', $15....dis 25 %

**Scythe Snaths.....dis 50&2 %**

**Shears.**

American (Cast) Iron.....dis 75&10 @ 75&10&5 %
Pruning.....See Pruning Hooks and Shears
Barnard's Lamp Trimmers.....₩ doz $3.75
Tinners'.....dis 20&2 %
Seymour's, List, Dec. 1881 dis 60&10&10@60&10&10&5 %
Heinisch's, List, Dec. 1881, dis 60&10&10@60&10&10&5 %
Heinsch's Tailor's Shears.....dis 33⅓ %
First quality C. S. Trimmers.....dis 80@80&10 %
Second quality C. S. Trimmers.dis 80&10@80&10&10 %
Acme Cast Shears.....dis 10&10 %
Diamond Cast Shears.....dis 10 %
Clipper.....dis 10&10 %
Victor Cast Shears.....dis 75&10@75&10&5 %
Howe Bros. & Hulbert, Solid Forged Steel.....dis 40 %
Cleveland Machine Co., Solid Steel Forged.....dis 70 %
Clauss Shear Co., Japanned.....dis 70 %
Clauss Shear Co., Nickeled, same list.....dis 60 %

**Sheaves.**

*Sliding Door*—
M. W. & Co., list July, 1888 .....dis 50&10 @ 60&5 %
R. & E., list Dec. 18, 1885.....dis 55&2 %
Corbin's list.....dis 60&10&2 %
Patent Roller.....dis 60&10&2 %
Patent Roller, Hatfield's.....dis 75 %
Russell's Anti-Friction, list Dec. 18, 1885..dis 60&2 %
Moore's Anti-Friction.....dis 60 %

*Sliding Sawing*—
R. & E. list Dec. 18, 1885.....dis 60&10&2 %
Sargent's list.....dis 60&10 %
Reading list.....dis 60&10&10 %

**Ship Tools.**

L. & I. J. White.....dis 20&5 %
Albertson Mfg. Co.....dis 25 %

**Shoes, Horse, Mule, &c.**

*Horse*—
Burden's, Perkins', Phœnix, at factory.....$4.00

*Mule*—Add $1 ₩ keg to above prices.

*Ox, Wrought*—
Ton lots.....₩ ₵ 9¢
1000 ℔ lots.....₩ ₵ 9½¢
500 ℔ lots.....₩ ₵ 10¢

**Shot.**—(*Eastern prices, 2¢ off, cash, 5 days.*)

Drop, ₩ bag, 25 ℔.....$1.45
Drop, ₩ bag, 5 ℔.....34
Buck and Chilled, ₩ 25-℔ bag.....$1.70
Buck and Chilled, ₩ 5-℔ bag.....39

**Shovels and Spades.**

Ames' Shovels, Spades, &c., list Nov. 1, 1885....dis 20 %
NOTE.—Jobbers frequently give 5 @ 7½ % extra on above.
Griffith's Black Iron.....dis 50&10 %
Griffith's C. S.....dis 60 @ 60&10 %
Griffith's Solid Cast Steel R. R. Goods.....dis 20 %
Old Colony (Sanford Fork & Tool Co).....dis 20 %
St. Louis Shovel Co.....dis 20 @ 20&7½ %
Hussey, Binns & Co.....dis 15 @ 25 %
Hubbard & Co.....dis 20@20&7½ %
Lehigh Mfg. Co.....dis 50&10 %
Fame Pettebone & Son, list January, 1886.....dis 30 %
Remington's (Lowman's Patent).....dis 30&10 @ 40 %
Rowland's, Black Iron.....dis 50&10 %
Rowland's Steel.....dis 60&5 @ 60&10 %

**Shovels and Tongs.**

Iron Head.....dis 60&10@60&10&5 %
Brass Head.....dis 60&10&10 %

**Skeins, Thimble.**

Western list.....dis 75&5 @ 75&10 %
Columbus Wrt. Steel, list Nov. 1, 1887.....dis 20 %
Coldbrookdale Iron Co .....dis 50&10 %
Utica P. S. T. Skeins.....dis 60 %
Utica Turned and Fitted.....dis 35 %

**Sieves.**

Buffalo Metallic, S. S. & Co., new list..dis 50&25&10 %
Barler Flour Sifters.....₩ doz $2.00
Smith's Adjustable Sifters.....₩ doz $2.25
Smith's Adjustable Milk Strainer.....₩ doz $2.00
Smith's Adjustable F. & C. Strainer.....₩ doz $1.75

| *Sieves, Wooden Rim*— | Iron. | Plated. |
|---|---|---|
| Mesh 18, Nested, ₩ doz. | 70¢ | 90¢ |
| Mesh 20, Nested, ₩ doz. | 85¢ | $1.00 |
| Mesh 24, Nested, ₩ doz. | $1.00 | 1.10 |

**Sixes.**—School, by case.....dis 50&10 %

**Snaps, Harness, &c.**

Anchor (T. & S. Mfg Co.).....dis 65 %
Fitch's (Bristol).....dis 50&10 %
Hotchkiss.....dis 10 %
Andrews.....dis 80 %
Sargent's Patent Guarded.....dis 70&10&10 %
German, new list.....dis 40&10 %
Covert.....dis 50&2 %
Covert, New Patent.....dis 50&5&2 %
Covert New R. E.....dis 60@2 %
Covered Spring.....dis 60&10&10 %

**Soldering Irons.**

Covert's Adjustable, list Jan. 1, 1886.....dis 35&2 %

**Spoke Shaves.**—Iron.....dis 45 %
Wood.....dis 30 %
Bailey's (Stanley R. & L. Co.).....dis 40&10 %
Stearns'.....dis 20&10 @ 30 %

**Spoke Trimmers.**

Bonney's.....₩ dos $10.00, dis 50 %
Stearns'.....dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ dos, dis 55&10 %
Douglass'.....₩ dos $9.00, dis 20 %

**Spoons and Forks.**

*Tinned Iron*—
Basting, Central Stamping Co.'s list.....dis 70&10 %
Solid Table and Tea, Central Stamping Company's list.....dis 70&10 %
Buffalo, S. S. & Co.....dis 33⅓&2 %

*Silver-Plated*—4 mos. or 5 % cash 30 days.
Meriden Brit. Co., Rogers.....dis 50 %
C. Rogers & Bros.....dis 50 %
Rogers & Bro.....50 %
Reed & Barton.....dis 50 %
Wm. Rogers Mfg. Co.....dis 50&10 @ 50&10&5 %
Simpson, Hall, Miller & Co.....dis 50&10 %
Holmes & Edwards Silver Co..dis 50&10 @ 50&10&5 %
H. & E. Silver Co. Mexican Silver.....dis 50&5 %
H. & E. Silver Co., Durham Silver.....dis 50&5 %
German Silver.....dis 50 @ 50&5 %
German Silver, Hall & Elton.....dis 50&5 %, cash
Nickel Silver.....dis 50&5@50&10&5 %, cash
Britannia.....dis 60 %
Boardman's Flat Ware.....dis 50&10 %
Boardman's Nickel Silver.....dis 50 %
Boardman's Brit'nia Spoons, case lots.....dis 60 %

**Springs.**

Elliptic, Concord, Platform and Half Scroll.....dis 60 @ 60&5 %
Cliff's Bolster Springs.....dis 20 %

**Squares.**

Steel and Iron.....
Nickel-Plated.....
} dis 75 @ 80 %

Try Square and T Bevels.....dis 60&10&10 @ 70 %
Disston's Try Square and T Bevels.....dis 45&10 %
Winterbottom's Try and Miter.....dis 30&10 %
Starrett's Micrometer Caliper Squares.....dis 25 %

**Staples.**

Fence Staples, Galvanized } Same price as Barb Wire.
Fence Staples, Plain } See Trade Report.

**Steelyards.....dis 40&10@50 %**

**Stocks and Dies.**

Blacksmith's, Waterford Goods....dis 30&5 @ 30&10 %
Lightning Screw Plate.....dis 25 @ 30 %
Reece's New Screw Plates.....dis 33⅓ @ 33⅓&5 %

**Stone.**

Hindostan No. 1, 3¢; Axe, 3½¢; Ships No. 1, 5¢.
Sand Stone.....₩ ℔, 2¢
Washita Stone, Extra.....₩ ℔, 1 @ 22¢
Washita Stone, No. 1.....₩ ℔, 15 @ 16¢
Washita Stone, No. 2.....₩ ℔, 11 @ 12¢
Washita Slips, No. 1, Extra.....₩ ℔, 40 @ 42¢
Washita Slips, No. 1.....₩ ℔, 30 @ 32¢
Arkansas Stone, No. 1, 4 to 6 in.....₩ ℔, $1.35
Arkansas Stone, No. 1, 6 to 9 in.....₩ ℔, $1.75
Turkey Oil Stone.....4 to 8 in., ₩ ℔, 40¢
Turkey Slips.....₩ ℔, $1.00 @ $1.50
Lake Superior, Chase.....₩ ℔, 16¢
Lake Superior Slips, Chase.....₩ ℔, 31@32¢
Seneca Stone, Red Paper Brand, ₩ ℔.....18 @ 20¢
Seneca Stone, High Rounds, ₩ ℔.....20 @ 25¢
Seneca Stone, Small Wheels, ₩ gro.....$24.00

**Stove Polish.**—Joseph Dixon's..₩ gro $6, dis 10 %
Gem.....₩ gro $4.50, dis 10 %
Gold Medal.....₩ gro $6.00, dis 25 %
"Mirror".....₩ gro $6.00, dis — %
Lustro.....₩ gro $4.75 net
Ruby.....₩ gro $3.75 net
Rising Sun, 5 gro. lots.....₩ gro $5.50
Dixon's Plumbago.....₩ ℔ 8¢ net
Boynton's Noon Day, ₩ gro.....$5.00
Parlor Pride Stove Enamel.....₩ gross, $13
Yates' Liquid, 2 3 5 10 gal. cans
₩ gal... $0.90 .80 .70 .60
Yates Standard Paste Polish ,10-lb cans, per lb., 15 ¢
Jet Black.....₩ gro $3.50
Japanese.....₩ gro $3.50
Fireside.....₩ gro $2.50
Diamond Nickel Enamel.....₩ gro $19.00
Bonnell's Liquid Stove Polish.....₩ gro $4.00
Bonnell's Paste Stove Polish.....₩ gro $4.00

**Tacks, Brads, &c.**

List, Jan. 2, 1888.

American Iron Carpet Tacks.....dis 72½&10&2 %
Steel Carpet Tacks.....dis 72½&10&2 %
Swedes Iron Carpet Tacks.....dis 72½&10&2 %
American Iron Cut Tacks.....dis 70&10&2 %
Swedes Iron Tacks.....dis 67½&10&2 %
Swedes Iron Upholsterers' Tacks..dis 67½&10&2 %
Tinned Swedes Iron Tacks.....dis 67½&10&2 %
Tin'd Sw'des Iron Uphol'ers' Tacks.dis 67½&10&2 %
Gimp and Lace Tacks.....dis 67½&10&2 %
Tinned Gimp and Lace Tacks.....dis 67½&10&2 %
Swedes Iron Trimmers' Tacks.....dis 67½&10&2 %
Swedes Iron Miners' Tacks.....dis 67½&10&2 %
Swedes Iron Bill Posters' or Railroad Tacks.....dis 67½&10&2 %
Swedes Steel Tacks, all kinds (Swedes Iron price list).....dis 72½&10&2 %
Copper Tacks.....dis 33⅓&10&2 %
Copper Finishing Trunk and Clout Nails.....dis 33⅓&10&2 %
Finishing Nails.....dis 60&10&2 %
Trunk and Clout Nails.....dis 60&10&2 %
Tinned Trunk and Clout Nails.....dis 60&10&2 %
Basket Nails.....dis 60&10&2 %
Common and Patent Brads.....dis 60&10&2 %
Hungarian Nails.....dis 60&10&2 %
Chair Nails.....dis 60&10&2 %
Zinc Glaizers' Points.....dis 40&10&2 %
Cigar Box Nails.....dis 45&10&2 %
Picture-Frame Points.....dis 45&10&2 %
Looking-Glass Tacks.....dis 45&10&2 %
Leathered Carpet Tacks.....dis 45&10&2 %
Brush Tacks.....dis 45&10&2 %
Shoe Finders'.....List Jan. 2, 1888, dis 10 @ 10&5 %
Lining and Saddle Nails, List Jan. 1, 1886:
Silvered.....dis 30&10&10 %
Japanned.....dis 20&10&10 %
Double-pointed Tacks.....85 %
Wire Carpet Nails.....dis 50&10 %
Wire Brads and Nails.....See Nails, Wire
Steel Wire Brads, R. & E. Mfg. Co.'s list.....dis 50&10 %

Extra 10@10&5 % generally given.

**Tap Borers.**—Common and Rit.....dis 20&10 %
Ives' Tap Borers.....dis 33⅓&5 %
Enterprise Mfg. Co.....dis 20&10 @ 30 %
Clark's.....dis 33⅓ @ 35 %

**Tapes, Measuring.**—American.....dis 25&10 %
Spring.....dis 40 %
Chesterman's.....Regular list dis 25 @ 30 %

**Thermometers.**—Tin Case.....dis 80 @ 80&10 %

**Thimble Skeins.**—See Skeins.

**Ties, Bale.**—Steel Wire, Stan'rd list..dis 50&10&5 %

**Tinners' Shears, &c.**

Shears and Snips (P. S. & W.).....dis 20 @ 25 %
Punches—See Punches.
Snips, J. Mallinson & Co.....dis 33⅓ %

**Tinware.**

Stamped, Japanned & Pieced, list Jan. 20, 18°°.....dis 70&10 @ 70&10&5 %

**Tire Benders, Upsetters, &c.**

Stoddard's Lightning Fire Upsetters.....dis 15 %
Detroit Perfected Tire Bender.....dis 15 %

**Tobacco Cutters.**

Enterprise Mfg. Co. (Champion).....dis 20&10 @ 30 %
Wood Bottom.....₩ doz $5.00 @ $5.25
All Iron.....₩ doz $4.25
Nashua Lock Co.'s.....₩ dos $18.00, dis 50 @ 55 %
Wilson's.....dis 55 %
Sargent's.....₩ doz $24, dis 55&10 %
Acme.....₩ doz $20.00, dis 40 %

**Transom Lifters**

Wollensak's Patent Iron Bronzed.....dis 50 %
Reiher's Bronzed Iron Rods list Jan. 1, 1887.dis 50&2 %
Reiher's Real Bronze or Nickel Plate, list Jan. 1, 1887.....dis 50&2 %
Excelsior.....dis 50&10&2 %
Shaw's.....dis 50&10 %
Payson's Universal.....dis 40 @ 40&10 %
Crown and Star.....dis 50 %

**Traps.**

*Game*—
Newhouse.....dis 35 @ 40&5 %
Oneida Pattern.....dis 70 @ 70&5 %
Game, Blake's Patent.....dis 40&10&5 %

*Mouse and Rat*—
Mouse, Wood, Choker.....₩ dos holes. 11@12¢
Mouse, Round Wire.....₩ dos $1.50, dis 10 %
Mouse, Cage, Wire.....₩ dos $2.50, dis 10 %
Mouse, Catch-'em-alive.....₩ dos $2.50, dis 15 %
Mouse, "Bonanza".....₩ gross $10 net
Mouse, Delusion.....₩ gross $18.00, dis 15 %
Rat, "Decoy".....₩ gross $10.00, dis 10 %
Ideal.....₩ gross $10
Cyclone.....₩ gross $5.25
Hotchkiss Metallic Mouse, 5-hole traps....₩ doz 90¢
In full cases.....₩ doz 75¢

**Trowels.**—Lothrop's Brick and Plastering...dis 25 %
Reed's Brick and Plastering.....dis 15 %
Disston's Brick and Plastering.....dis 25 @ 25&10 %
Peace's Plastering.....dis 25 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 @ 20 %
Brade's Brick.....dis 25 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 70 %

**Triers.**—Butter and Cheese.....dis 25 %

**Trucks, Warehouse, &c.**

B. & L. Block Co.'s list, 1882.....dis 40 %

**Tubes, Boiler.**—See Pipe

**Twine.**

| | BC. | B. |
|---|---|---|
| No. 9, Flax Twine, ¼ and ½ ℔ Balls | 22¢ | 50¢ .. |
| No. 12, " " ¼ and ½ " | 21¢ | 29¢ .. |
| No. 18, " " ¼ and ½ " | 18¢ | 23¢ ... |
| No. 24, " " ¼ and ½ " | 18¢ | 23¢ .. |
| No. 36, " " ¼ and ½ " | 16¢ | 27¢ .... |
| No. 264, Mattrass, ¼ and ½ " | | 48 @ 50¢ |
| Chalk Line, Cotton, ¼ ℔ Balls | | .25¢ |
| Mason Line, Linen, ¼ " | | .55¢ |
| 2-Ply Hemp, ¼ and ½ ℔ Balls (Spring Twine) | | 11¢ |
| 2-Ply Hemp, 1 ℔ Balls | | 12 @ 13½¢ |
| 3-Ply Hemp, 1½ ℔ Balls | | 11 @ 11½¢ |
| Cotton Wrapping, 5 Balls to ℔ | | 15¢ @ 16¢ |
| 2, 3, 4 and 5 Ply Jute, ½ ℔ Balls | | 10¢ |
| Wool | | 6½¢ @ 6¾¢ |
| Paper | | 13¢ @ 14¢ |

Cotton Mops—6, 9, 12 and 15 ℔ to doz.....18¢

**Vises.**

Solid Box.....dis 60 @ 60&5 %

*Parallel*—
Fisher & Norris Double Screw.....dis 15&10 %
Stephens'.....dis 25 @ 30 %
Parker's.....dis 20 @ 25 %
Wilson's.....dis 55 %
Howard's.....dis 40 %
Bonney's.....dis 40&10 %
Millers Falls.....dis 40 @ 40&10 %
Trenton.....dis 40&5 @ 40&10 %
Merrill's.....dis 15&20 %
Sargent's.....dis 60&10&10 %
Backus and Union.....dis 40 %
Double Screw Leg.....dis 15&10 %
Prentiss.....dis 20&5 @ 25 %
Simpson's Adjustable.....dis 40 %

*Saw Filers*—
Bonney's, Nos. 2 & 3.....₩ dos $15.00, dis 4 &10 %
Stearn's.....dis 33⅓&10 @ 33⅓&10&10 %
Stearn's Silent Saw Vises.....dis 33⅓ @ 35 %
Sargent's.....dis 66⅔&10 %
Hopkins'.....₩ dos $17.50 dis 10 %
Reading.....dis 40&10 %
Wentworth.....dis 20&10 %
Combination Hand Vise.....₩ gro, $42.00
Cowell Hand Vises.....dis 20 %
Bauer's Pipe Vises.....dis 10 %

**Wagon Boxes.**

Per lb.....2½¢

**Wagon Jacks.**—Daisy.....₩ doz $4.00, dis 25 %

**Washer Cutters.**

Smith's Patent.....₩ dos $12.00, dis 20&10&10 %
Johnson's.....₩ dos $11.00, dis 33⅓ %
Penny's.....₩ dos Pol. $14; Jap'd. $16..dis 55 %
Appleton's.....₩ dos $16.00, dis 60&10 %
Bonney's.....dis 30&10 %

**Washers.**

| Size... | ¼ | 5-16 | ⅜ | ½ | ⅝ | ¾ | 1 |
|---|---|---|---|---|---|---|---|
| Washers... | 7 | 5¼ | 4½ | 3¾ | 3¼ | 3¼ | 3¼ |

In lots less than 200 ℔, ₩ ℔, add ½¢, 5-℔ boxes 1¢ to list.

**Wedges.**—Iron.....₩ ℔ 3½¢
Steel.....₩ ℔ 4 ¢

**Well Buckets, Galvanized.**

Hill's.....₩ doz., 12 qt., $4.25; 14 qt., $5.25
Iron Clad.....₩ doz., 14 qt., $4.25 @ $4.50
Whiting's Flat Iron Band.....₩ doz $4.25 @ $4.50
Whiting's Wired Top.....₩ doz $4.00 @ $4.25

**Well Wheels**—8 in., $2.25; 10 in., $2.70; 12 in., $3.25.

**Wire.**

*Iron*—
Market, Br. & Ann., Nos. 0 to 18.....dis 70&10&75 %
Market, Coppered, Nos. 0 to 18.....dis 70@70&5 %
Market, Galvanized, Nos. 0 to 18.....dis 65&5 %
Market Tin'd, Tinned list Nos. 0 to 18.....dis 67½ %
Stone Br. & Ann'd, Nos. 16 to 18,...dis 72½@72½&5 %
Stone, Bright & Ann'd, Nos. 19 to 26.....dis 75@75&5 %
Stone, Br. & Ann'd, Nos. 27 to 36.....dis 70&10&5 %
Stone, Tin'd, Tin'd list, Nos. 18 to 36..dis 70@70&10 %
Tinned Broom Wire, Nos. 18 to 24..dis 70&5@70&10 %
Galvanized Fence.....dis 65 %
Annealed Fence, Nos. 8 & 9.....dis 75 %
Annealed Grape, Nos. 10 to 14.....dis 75 %
Brass, list, Jan. 18, '84.....dis 15 @ 20 %
Copper, list Jan. 18, 1884.....dis 20 @ 25 %
Barb Fence.....See Trade Report
Wire on Spools.....dis 65 %
Malin's Steel and Tinned Wire on Spools.....dis 40 %
Malin's Brass and Copper Wire on Spools.....dis 30 %
Cast Steel Wire.....dis 50 %
Stubs' Steel Wire.....$6.00 to 2, dis 30 %
Steel Music Wire, Nos. 12 to 30.....55¢ @ 75 %
Picture Wire.....dis 60&10 %
Barb Wire Safety Guards.....₩ 1000 $9.00, dis 25 %
Wire Clothes Lines.—See Lines.

**Wire Cloth, Netting, &c.**

Painted Screen Cloth, No. 34, ₩ 100 sq. ft.....$1.90
Painted Screen Cloth, No. 33, ₩ 100 sq. ft.....$2.00
Galvanized Wire Netting.....dis 70&10 @ 75 %

**Wire Goods.**—See Bright Wire Goods.

**Wire Rope.**—List May 1, 1886.....dis 33⅓ %

**Wrenches.**—American Adjustable.....dis 40 %
Baxter's Adjustable "S".....dis 40&10 @ 50 %
Baxter's Diagonal.....dis 40&10 @ 50 %
Coes' Genuine.....dis 55&2 %
Coes' "Mechanics".....dis 55&10&3 %
Girard Standard.....dis 70&10 %
Machinists, Sterling Wrench Co.....dis 70&10 %
Lamson & Sessions Engineers'.....dis 60&10 %
Lamson & Sessions' Standard.....dis 70&10 %
Coes' Pattern, Wrought, Girard Agricultural, Lamson & Sessions' Agricultural, Sterling Wrought.....dis 80 @ 80&5 %
Bemis & Call's Patent Combination.....dis 35 %
Bemis & Call's Merrick's Pattern.....dis 35 %
Bemis & Call's Brigg's Pattern.....dis 25 %
Bemis & Call's Cylinder or Gas Pipe.....dis 40&5 %
Remis & Call's No. 3 Pipe.....dis 35&5 %
Aiken's Pocket (Bright).....$6.00, dis 50&10 %
The Favorite Pocket (Bright).....₩ dos $4.00, dis 40¢
Webster's Patent Combination.....dis 25 %
Boardman's.....dis 20&10 %
Always Ready.....dis 25&5 %
Alligator.....dis 50 %
Donohue's Engineer.....dis 20&10 %
Acme, Bright.....dis 60&3 %
Acme, Nickeled.....dis 50&3 %
Walker's.....dis 55&3 %
Diamond.....dis 40 %
Diamond Patent Steel.....dis 40 %

**Wringers, Clothes.**

List Jan. 10, 1888, $2.50 off.

**Wrought Goods.**

Staples Hooks, &c., is Jan. 12, '87..dis 80&20@50&2½ %

# CURRENT METAL PRICES.

## OCTOBER 3, 1888.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market reports.

### IRON AND STEEL.

#### Bar Iron from Store.

| | |
|---|---|
| Common Iron : | |
| ¾ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in..... | ₽ lb 1.90 @ 2.00¢ |
| Refined Iron : | |
| ¾ to 2 in. round and square.. 1 to 4 in. x ⅜ to 1½ in..... 4½ to 6 in. x ⅜ to 1 in ..... | ₽ lb 2.10 @ 2.2¢ |
| 1 to 6 in. x ⅛ and 5-16 ..... | ₽ lb 2.30 @ 2.4¢ |
| Rods—⅜ and 11-16 round and sq.. | ₽ lb 2.30 @ 2.3¢ |
| Bands—1 to 6 x 3-16 to No. 12.... | ₽ lb 2.30 @ 2.4¢ |
| "Burden Best" Iron, base price.. | ₽ lb 3.00 @ ... ¢ |
| Burden's "H. B. & S." Iron, base price..... | ₽ lb 2.80 @ ....¢ |
| "Ulster"..... | lb lb 3.10 @ ....¢ |
| Norway Rods ..... | 4.00 @ 5.00¢ |

#### Merchant Steel from Store.

| | Per pound. |
|---|---|
| Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots..... | 2¾¢ @ 3¢ |
| Best Cast Steel, base price in small lots | 8¾¢ @ 9¢ |
| Best Cast Steel Machinery, base price in small lots..... | 5½¢ @ 6¢ |

For Classification and Extras adopted by the Merchant Steel Association of the United States, June 1, 1888, see *The Iron Age*, June 21, 1888.

#### Sheet Iron from Store.

| | Common American. | R. G. Cleaned. |
|---|---|---|
| 10 to 16.....₽ lb | 2.75 @ 2.80¢ | 3.25 @ .....¢ |
| 17 to 20 .....₽ lb | 2.85 @ 3.00¢ | 3.25 @ 3.50 ¢ |
| 21 to 24.....₽ lb | 3.00 @ 3.10¢ | 3.50 @ .....¢ |
| 25 and 26....₽ lb | 3 20 @ .... | 3.50 @ .....¢ |
| 27..... ...₽ lb | 3.35 @ 3.37½¢ | 3.75 @ .....¢ |
| 28.....₽ lb | 3.50 @ ...¢ | 4.00 @ .....¢ |

| | B. B. | 2d qual. |
|---|---|---|
| Galv'd, 14 to 20, ₽ lb. | 4.50 @ ... .. | 4 38 @ .....¢ |
| Galv'd, 21 to 24, ₽ lb, | 4.87½ @ . .... | 4.75 @ .....¢ |
| Galv'd, 25 to 26, ₽ lb, | 5 25 @ ... . | 5.12 @ .....¢ |
| Galv'd, 27..... ₽ lb, | 5.62½ @ .... | 5.48 @ .....¢ |
| Galv'd, 28..... ₽ lb, | 6 00 @ .... | 5.85 @ . ..¢ |
| Patent Planished..... | ₽ lb A 10¢ | B, 9¢ |
| Russia..... | ₽ lb 9½¢ @ 10¢ | |
| American Cold Rolled B. B..... | ₽ lb 5¢ @ 7¢ | |

#### English Steel from Store.

| | |
|---|---|
| Best Cast .... ..... ..... ..... | ₽ lb 15 ¢ |
| Extra Cast .. ..... .... | ₽ lb 16½ @ 17 ¢ |
| Swaged, Cast..... .. ..... ..... | ₽ lb 16 ¢ |
| Best Double Shear..... | ₽ lb 15 ¢ |
| Blister, 1st quality..... . ... .... | ₽ lb 12½¢ |
| German Steel, Best..... | ₽ lb 10 ¢ |
| 2d quality. ..... .... ..... | ₽ lb 9 ¢ |
| 3d quality .... ... ..... | ₽ lb 8 ¢ |
| Sheet Cast Steel, 1st quality..... | ₽ lb 15 ¢ |
| 2d quality..... | ₽ lb 14 ¢ |
| 3d quality..... | ₽ lb 12½¢ |

### METALS.

#### Tin.

| | Per lb |
|---|---|
| Banca, Pigs..... | 25¢ |
| Straits, Pigs..... | 25¢ |
| English, Pigs..... | 24½¢ |
| Straits in Bars..... | 26¢ |

#### Tin Plates.

| | | | Per box. |
|---|---|---|---|
| | *Charcoal Plates.—Bright.* | | |
| Melyn Grade..... | IC. 10 x 14... .... | $6 00 @ | $6.25 |
| " " ... .... | IC, 12 x 13..... | 6.25 @ | 6.50 |
| " " ..... | IC, 14 x 20..... | 6.00 @ | 6.25 |
| " " ..... | IC, 20 x 28..... | 12 50 @ | 13.00 |
| " " .... .. | IX, 10 x 14, .... | 7.50 @ | 7.75 |
| " " ... .. | IX, 12 x 12..... | 7.75 @ | 8.00 |
| " " ..... | IX, 14 x 20..... | 7.50 @ | 7.75 |
| " " ..... | IX, 20 x 28..... | 15 50 @ | 16.00 |
| " " ..... | DC, 12½ x 17..... | 5.75 @ | 6.00 |
| " " ..... | DX, 12½ x 17... ... | 7.25 @ | 7.50 |
| Call and Grade..... | IC, 10 x 14.... .. | 6.00 @ | 6 26 |
| " " ..... | IC, 12 x 12..... | 6.25 @ | 6.50 |
| " " ..... | IC, 14 x 20..... .. | 6.00 @ | 6.25 |
| " " ..... | IX, 10 x 14. ..... | 7.50 @ | 7.75 |
| " " ..... | IX, 12 x 12..... | 7.75 @ | 8.00 |
| " " ..... | IX .14 x 20 .... | 7.50 @ | 7.75 |
| Allaway Grade.... | IC, 10 x 14.... | $5.37½ @ | .. |
| " " ..... | IC, 12 x 12..... | 5.50 @ | .... |
| " " ..... | IC, 14 x 20..... | 5.37½ @ | .... |
| " " ..... | IC, 20 x 28..... | 11.50 @ | .... |
| " " ..... | IX, 10 x 14..... | 6.25 @ | .... |
| " " ..... | IX, 12 x 12 ..... | 6.50 @ | .... |
| " " ..... | IX, 14 x 20 ..... | 6.25 @ | .... |
| " " ..... | IX, 20 x 28..... | | 13.00 |
| " " ...DC, 12½ x 17..... | | .00 @ | ... |
| " " ..DX, 12½ x 17... ... | | 6.00 @ | .... |
| | *Coke Plates —Bright.* | | |
| Steel Coke.—IC, 10 x 14, 14 x 20 ..... | | $5.00 @ | .... |
| 10 x 20..... | | 7.50 @ | 7.65 |
| 20 x 28..... | | 10.25 @ | .... |
| IX, 10 x 14, 14 x 20..... | | | 5.75 |
| BV Grade.—IC, 10 x 14, 14 x 20..... | | 4.70 @ | ... |
| | *Charcoal Plates.—Terne.* | | |
| Dean Grade.—IC, 14 x 20..... | | $4.62½ @ | ... |
| 20 x 28..... | | 9 25 @ | .... |
| IX, 14 x 20..... | | 5.62½ @ | .... |
| 20 x 28..... | | 11.37½ @ | .... |
| Abecarne Grade.—IC, 14 x 20..... | | 4.50 @ | .... |
| 20 x 28..... | | 9.00 @ | .... |
| IX, 14 x 20..... | | 5.50 @ | .... |
| 20 x 28..... | | | 10.80 |
| | *Tin Boiler Plates.* | | |
| IXX, 14 x 26..... | 112 sheets. ..... | $12.50 @ | $12.75 |
| IXX, 14 x 28..... | 112 sheets.... | 12 75 @ | |
| IXX, 14 x 31..... | 112 sheets ..... | 14.25 @ | |

#### Copper.

DUTY: Pig, Bar and Ingot, 4¢; Old Copper, 3¢ ₽ lb. Manufactured (including all articles of which Copper is a component of chief value), 45 % ad valorem.

| | |
|---|---|
| *Ingot.* | |
| Lake..... ... ... ... | @ 18¼¢ |
| "Anchor" Brand.... ..... .. ... .. .. | @ 18 ¢ |

*Sheet and Bolt.*

Prices adopted by the Association of Copper Manufacturers of the United States, December 10, 1887, being quotations for all sized lots.

| Not wider than | Not longer than | And longer than | Weights per square foot and prices per pound. Over 64 oz. | 32 to 64 oz. | 16 to 32 oz. | 14 to 16 oz. | 12 to 14 oz. | 10 to 12 oz. | 8 to 10 oz. | Less than 8 oz. |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 72 | | 25 | 25 | 25 | 26 | 27 | 28 | 31 | 33 |
| 30 | | 72 | 25 | 25 | 25 | 26 | 28 | 30 | 34 | ... |
| 36 | 96 | | 25 | 25 | 25 | 27 | 29 | 33 | 36 | .... |
| 36 | | 96 | 25 | 25 | 26 | 28 | 30 | 34 | 38 | .... |
| 48 | 96 | | 25 | 25 | 27 | 29 | 31 | 35 | .... | .... |
| 48 | | 96 | 25 | 25 | 28 | 30 | 32 | 36 | .... | .... |
| 60 | 96 | | 25 | 25 | 30 | 32 | 37 | .... | .... | .... |
| 60 | | 96 | 25 | 26 | 31 | .... | .... | .... | .... | .... |
| 84 | 96 | | 26 | 27 | .. | .... | .... | . | .... | .... |
| 84 | | 96 | 27 | 28 | .... | .... | .... | .... | .... | .... |
| Over 84 in. wide | | | 28 | 30 | ... | .... | .... | .... | .... | .... |

| | | | | |
|---|---|---|---|---|
| All Bath Tub Sheets..... | 16 oz. | 14 oz. | 12 oz. | 10 oz. |
| Per pound..... | $0.28 | 0.30 | 0.32 | 0 35 |

Bolt Copper, ⅝ inch diameter and over, per pound.. ..... 25¢

Circles, 60 inches in diameter and less, 3 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 60 inches diameter, up to 96 inches diameter, inclusive, 5 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Circles, over 96 inches diameter, 6 cents per pound advance over lowest prices of Sheet Copper of the same thickness.

Segment and Pattern Sheets, 3 cents per pound advance over price of sheets required to cut them from.

Cold or Hard Rolled Copper, 14 ounces per square foot and heavier, 1 cent per pound over the foregoing prices.

Cold or Hard Rolled Copper, lighter than 14 ounces per square foot, 2 cents per pound over the foregoing prices.

*Copper Bottoms, Pits and Flats.*

| | Per pound. |
|---|---|
| 14 ounce to square foot and heavier..... | 28¢ |
| 12 ounce and up to 14 ounce to square foot..... | 29¢ |
| 10 ounce and up to 12 ounce..... | 31¢ |

Circles less than 8 inches diameter 2 cents per pound additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

*Tinning.*

| | |
|---|---|
| Tinning sheets on one side, 10, 12 and 14 x 48 each..... | 8¢ |
| Tinning sheets on one side, 30 x 60 each ..... | 30¢ |
| For tinning boiler sizes, 9 in (sheets 14 in. x 60 in.), each. ..... | 15¢ |
| For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each ..... | 12¢ |
| For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.) each..... | 12¢ |
| Tinning sheets on one side, other sizes, per square foot..... | 2½¢ |

For tinning both sides double the above prices.

*Planished Copper.*

Planished Copper List May 5, 1888..... Net

#### Brass and Copper Tubes.

| Seamless Copper. | | Seamless Brass. | |
|---|---|---|---|
| ⅝ inch ₽ lb..... | 50¢ | ⅝ inch ₽ lb..... | 47¢ |
| ½ " " ..... | 44¢ | ½ " " ..... | 41¢ |
| ⅝ " " ..... | 42¢ | ⅝ " " ..... | 39¢ |
| ¾ " " ..... | 40¢ | ¾ " " ..... | 37¢ |
| ⅞ " " ..... | 39¢ | ⅞ " " ..... | 36¢ |
| 1 " " ..... | 37¢ | 1 " " ..... | 34¢ |
| 1½ " " ..... | 34¢ | 1½ " " ..... | 31¢ |

#### Roll and Sheet Brass.

Discount from list. ..... 10 @ 15 %

#### Spelter.

Duty: Pig, Bars and Plates, $1.50 ₽ 100 lb.

| | |
|---|---|
| Western Spelter. .. .. ..... | 5½¢ @ 6¢ |
| "Bergenport" ..... ..... | 8¾¢ |
| "Bertha" ... ... ..... | 7¾ @ 8¢ |

#### Zinc.

Duty; Sheet, 2½¢ ₽ lb.

| | |
|---|---|
| 600 lb casks..... | 6¾¢ |
| Per lb ..... | 7½¢ |

#### Lead.

Duty: Pig, $2 ₽ 100 lb. Old Lead, 2¢ ₽ lb. Pipe and Sheets, 3¢ ₽ lb.

| | |
|---|---|
| American..... .. ..... | 5½ @ 6 ¢ |
| Newark ..... | 5½ @ 6 ¢ |
| Bar..... | 6½¢ |
| Pipe, subject to trade discount..... | 7½¢ |
| Tin-Lined Pipe, subject to trade discount..... | 15¢ |
| Block Tin Pipes, subject to trade discount..... | 45¢ |
| Sheet, subject to trade discount..... | 8¢ |

#### Solder.

½ @ ½ (Guaranteed)... ..... 16¢

Extra Wiping ..... 13½¢

The prices of the many other qualities of Solder in the market indicated by private brands vary according to composition.

#### Antimony.

| | |
|---|---|
| Cookson... ..... | ₽ lb 13½ @ 14¢ |
| Hallett s ..... | " 11½¢ |

#### Plumbers' Brass Work.

| | Discount per cent. |
|---|---|
| Ground Bibbs and Stops..... | 55&10&2 |
| Ground Stops, Hydrant Cocks, &c..... | 55&10&2 |
| Corporation Cocks..... .... | 55&10&2 |
| Corporation Cocks, "Mueller" Pattern, from Western list..... .. .. .... | 55&10&2 |
| Ground Basin and Shampooing Cocks.... | 50&10&2 |
| Compression Basin Cocks ..... | 50&10&2 |
| Compression Basin and Sink Cocks..... | 50&10&2 |
| Compression Pantry Cocks..... .. | 50&10&2 |
| Compression Double Basin and Shampooing Cocks ..... | 50&10&2 |
| Compression Double Bath Cocks..... | 50&10&2 |
| Compression Bibbs, Urinal Cocks, Sill Cocks, Stops, Hopper Cocks, Hydrant Cocks and Ball Cocks..... | 50&10&2 |
| Basin Plugs and Basin Grates..... | 55&10&2 |
| Bath and Wash Trav Plugs..... | 55&10&2 |
| Bath Wastes and Washers, Bath and Basin Valves, Sewer and Vacuum Valves, Cistern Valves, Pump Valves and Strainers, Ship Closet Vaives and Suction Baskets. .... ..... | 55&10&2 |
| Basin Clamps, Basin Joints and Strainers | 55&10&2 |
| Boiler Couplings, Ground Face, per set $1.25.. ..... .. | dis 10 |
| Boiler Couplings, Plain Face, per set $1.20... | dis 10 |
| Water Back Valve and Plain Couplings, Soldering Nipples and Unions..... | 55&10&2 |
| Union Joints..... | 60&10&2 |
| Hydrant Nozzles, Handles and Guides, Sockets and Clamps, Street Washer Screws and Guides..... | 55&10&2 |
| Hose Goods ..... ..... ..... ..... | 55&10&2 |

#### Steam and Gas Fitters' Brass and Iron Work.

| | Discount per cent. |
|---|---|
| Brass Globe Valves... ..... | 60&10&2 |
| Finished Brass Globe Valves, with Finished Brass Wheels ..... ..... | 40&10&2 |
| Brass Globe Valves, with Patent Wood Wheels. | 60&10&2 |
| Brass Globe Angle and Corner Valves.... | 60&10&2 |
| Brass Radiator Angle Valves..... .. | 60&10&2 |
| Brass Radiator Angle Valves, Frink's Patent. | 60&10&2 |
| Brass Cross and Check Valves..... . ... | 60&10&2 |
| Brass Check Valves... ..... | 60&10&2 |
| Brass Hose Valves..... ..... | 60&10&2 |
| Brass and Iron Frink Valves ..... | 60&10&2 |
| Brass Safety Valves..... | 60&10&2 |
| Brass Vacuum Valves..... ..... . | 50&10&2 |
| Brass Whistle Valves..... | 60&10&2 |
| Brass Balance, Back Pressure and Foot Valves. | 50&10&2 |
| Brass Butterfly and Throttle Valves..... | 50&10&2 |
| Brass Pump Valves..... | 50&10&2 |
| Brass Steam Cocks..... | 57½&10&2 |
| Brass Service, Meter and Union Meter Cocks..... ... ... ... | 57½&10&2 |
| Brass Whistles, Water Gauges and Oil Cups.. . | 60&10&2 |
| Brass Hollow Plug, Tallow and Globe Oil Cups. | 50&10&2 |
| Brass Lubricators..... .... .. . | 60&10&2 |
| Brass Air Valves. ..... .. .. | 60&10&2 |
| Brass Air Cocks..... ..... ... | 60&10&2 |
| Brass Gauge Cocks ..... | 55&10&2 |
| Brass Cylinder Cocks and Steam Bibbs.. | 50&10&2 |
| Brass Swing Joints and Expansion Joints. | 50&10&2 |
| Brass Test Pumps. . ..... | 50&10&2 |
| Brass Steam Fittings, Rough..... ... | 60&10&2 |
| Brass Steam Fittings, Finished.. ..... | 2½&10&2 |
| Brass Union Joints..... | 60&10&2 |
| Brass Soldering Unions and Nipples .... | 55&10&2 |
| Brass Hose Fittings, Fusible and Boiler Plugs..... ... ..... | 55&10&2 |
| Iron Body Globe, Angle, Cross and Check Valves ... ... ... ... ... | 65&10&2 |
| Iron Body Safety, Throttle, Back Pressure, Butterfly and Foot Valves..... | 65&10&2 |
| Iron Cocks, all Iron ..... ..... | 65&10&2 |
| All Iron Valves..... ..... | 65&10&2 |

#### Miscellaneous.

| | Discount per cent. |
|---|---|
| Cast Iron Fittings..... ... ..... . ... | 70&10 |
| Plugs and Bushings ..... .... | 75&10 |
| Malleable Iron Unions... ... . . ..... | 67½ |
| Malleable Iron Fittings..... ..... . .. | 25 |

#### Paints.

| | |
|---|---|
| Black, Lamp—Coach Painters'..... | ₽ lb 22 @ 24¢ |
| " Ordinary..... | 6¢ |
| Black, Ivory Drop, fair..... | 12 @ 15¢ |
| " " best..... | 28¢ |
| Black Paint, in oil.....kegs, 8¢; assorted cans, 11¢ | |
| Blue, Prussian, fair to best... ..... | 40 @ 55¢ |
| " " in oil..... | 45 @ 55¢ |
| " Chinese dry ..... ..... ..... | 70¢ |
| " Ultramarine..... . ..... ..... | 18 @ 30¢ |
| Brown, Spanish..... ..... | 1¼¢ |
| " Van Dyke..... ..... ..... | 10 @ 12¢ |
| Dryers, Patent American..ass'd cans, 9¢; kegs 7¢ | |
| Green, Chrome ..... ..... | 15 @ 25¢ |
| Green, Chrome in oil..... | 14 @ 18 @ 25¢ |
| Green, Paris... ..... ..... | good, 20¢; best, 25¢ |
| Green, Paris in oil ..... | good, 30¢; best, 35¢ |
| Iron Paint, Bright Red..... ..... | ₽ lb 2½¢ |
| Iron Paint, Brown ..... ..... | ₽ lb 1½¢ |
| Iron Paint, Purple ..... ..... | ₽ lb 3¢ |
| Iron Paint, Ground in oil, Bright Red.... | ₽ lb 6½¢ |
| Iron Paint, Ground in oil, Red ..... | ₽ lb 5½¢ |
| Iron Paint, Ground in oil, Brown..... | ₽ lb 5½¢ |
| Iron Paint, Ground, Purple..... | ₽ lb 2¢ |
| Litharge..... | 6½¢ |
| Mineral Paints .. .. ..... ..... | ...2 @ 4¢ |
| Orange Mineral..... | 10¢ |
| Red Lead, American. ..... | 6½¢ |
| Red Venetian (Eng.) dry.... ..... | $1.65 @ $1.70 |
| Red Venetian in oil.....asst'd cans, 11¢; kegs, 8¢ | |
| Red Indian Dry. . ..... ..... | 9 @ 12¢ |
| Rose Pink... ..... ..... | ..10 @ |